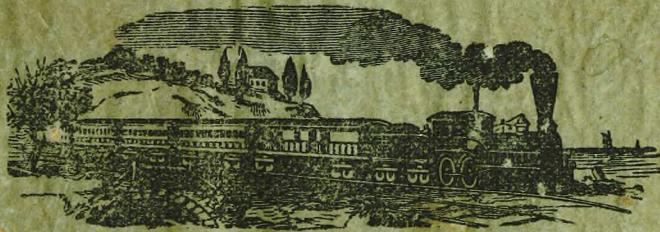


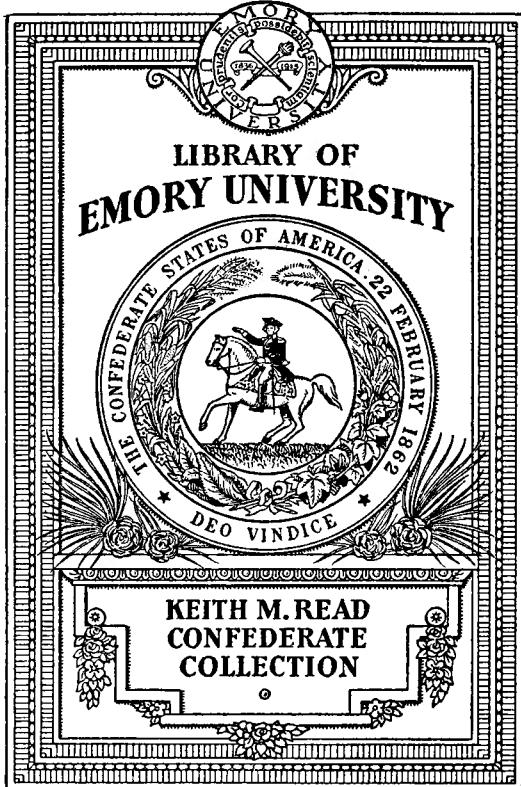
OUR OWN
PRIMARY ARITHMETIC.

BY
REV. S. LANDER, A. M.,
PRINCIPAL OF LINCOLNTON FEMALE SEMINARY.



SECOND EDITION.

GREENSBORO, N. C.:
PUBLISHED BY STERLING, CAMPBELL AND ALBRIGHT.
RICHMOND, VA.: W. HARCRAVE WHITE.
COLUMBIA, S. C.: TOWNSEND AND NORTH.



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P R E F A C E .

The following pages are respectfully offered as an introduction to the author's School Arithmetic, in the hope that they may in some sort supply a necessity which has long been felt to exist.

Entered according to Act of Congress, in the year 1863,
BY REV. S. LANDER,
In the Clerk's Office of the District Court of the Confederate States, for the District of Cape Fear,
North Carolina.

PRIMARY ARITHMETIC.

PART I.

ADDITION.

§ 1. One and one are how many ?

+ + ++

One and two are how many ?

+ ++ +++

One and three are how many ?

+ +++ +---

One and four are how many ?

One and five are how many ?

One and six are how many ?

One and seven are how many ?

One and eight are how many ?

One and nine are how many ?

1. John gave one cent for a slate pencil; and five cents for a lead-pencil; what did he give for them both ?

MODEL.—One and five are six; hence, he gave six cents for them both.

2. Willie bought an apple for one cent, and some candy for four cents ; what did they both cost him ?
3. Mary gave one peach to Lizzie, and two to Emma ; how many did she give to them both ?
4. A man gave one dollar for a pocket knife, and eight dollars for a vest ; what did he give for both ?
5. Father sowed one acre in turnips, and nine acres in oats ; how many acres did he sow in both ?
6. Mother gave Lucy one biscuit before dinner, and one before supper ; how many did she give her both times ?
7. James walked one mile in the morning, and two miles in the afternoon ; how far did he walk all day ?
8. If a pencil cost one cent, and a slate cost six cents, what do both together cost ?

§ 2. Two and one are how many ?

++ + +++

Two and two are how many ?

++ ++ +++++

Two and three are how many ?

Two and four are how many ?

Two and five are how many ?

Two and six are how many ?

Two and seven are how many ?

Two and eight are how many ?

Two and nine are how many ?

1. Susan gave two cents to one beggar, and one to another ; how many did she give to both ?

MODEL.—Two and one are three ; hence, she gave three cents to both.

2. James had two books, and his father bought him two more ; how many had he then ?

3. In the garden there are two apple-trees, and three pear-trees; how many fruit trees are there?

4. In a certain class there are two small girls, and four large ones; how many girls are in the class?

5. I gave two dollars for a pair of shoes, and five dollars for a silk hat; what did I give for them both?

6. I pay two dollars a year for a weekly paper, and six dollars for a daily; how much do I pay for both?

7. I had two apples, and brother gave me seven more; how many had I then?

8. If a Spelling Book cost two shillings, and an Arithmetic cost eight shillings, what do both together cost?

§3. Three and one are how many?

+++ + ++++

Three and two are how many?

+++ ++ ++++

Three and three are how many?

Three and four are how many?

Three and five are how many?

Three and six are how many?

Three and seven are how many?

Three and eight are how many?

Three and nine are how many?

1. If I walk three miles one day, and two miles the next day, how far do I walk both days?

MODEL.—Three and two are five; hence, I walk five miles in both days.

2. If I buy three pounds of butter from one man, and three pounds from an other, how many pounds do I buy from both?

3. If Jane give a beggar three cents, and John give him four cents, how much do they both give him?

4. Mother gave three dollars for a calico dress, and five dollars for a muslin dress; what did they both cost her?

5. John gathered three quarts of chestnuts, and James gathered six quarts; how many quarts had they both?

6. I earn three shillings a day, and father earns seven shillings; what do we both earn?

7. I gathered three green apples, and eight red ones; how many of both kinds did I gather?

8. Johnny is three years old, and his sister Sarah is nine years older; how old is Sarah?

§ 4. Four and one are how many?

$$+++ + + + +$$

Four and two are how many?

$$+++ ++ + + + +$$

Four and three are how many?

Four and four are how many?

Four and five are how many?

Four and six are how many?

Four and seven are how many?

Four and eight are how many?

Four and nine are how many?

1. A man paid four dollars for some hay, and eight dollars for some oats; what did he pay for both?

MODEL.—Four and eight are twelve; hence, he paid twelve dollars for both?

2. Edward had four marbles, and Warren gave him three more; how many had he then?

3. Sallie gave four cents to a beggar, and spent two cents for candy; how many cents did she spend in all?

4. If a rocking chair cost four dollars, and a table cost five dollars, what do they both cost?

5. If I earn four dollars one week, and six dollars the next week, how much do I earn both weeks ?

6. A man gathered four bushels of apples from one tree, and seven bushels from an other ; how many bushels did he gather from both trees ?

7. Jack caught four squirrels before dinner, and eight after dinner ; how many did he catch all day ?

8. Lucy had four white roses, and nine red ones ; how many roses had she in all ?

§ 5. Five and one are how many ?

+++++ + ++++++

Five and two are how many ?

+++++ + + ++++++

Five and three are how many ?

Five and four are how many ?

Five and five are how many ?

Five and six are how many ?

Five and seven are how many ?

Five and eight are how many ?

Five and nine are how many ?

1. There are five geese swimming on one side of the pond, and one on the other ; how many are there in all ?

MODEL.—Five and one are six ; hence, there are six geese in all.

2. Susan read five pages of history, and two pages of poetry ; how many pages of both did she read ?

3. Emily had five picture books, and Clarence gave her three more ; how many had she then ?

4. In a certain family there are five sons, and four daughters ; how many children are there in the family ?

5. Thomas hoed five rows of corn one day, and Joseph hoed five rows ; how many rows did they both hoe ?

6. There are five boys on one bench, and six on an other ; how many are there on both benches ?

7. I gathered five apples from a tree, and left seven on it ; how many were there on it at first ?

8. Warren gave a beggar five cents, and George gave him eight cents ; how many cents did they both give him ?

§ 6. Six and one are how many ?

$$+++++ + ++++++$$

Six and two are how many ?

$$+++++ ++ ++++++$$

Six and three are how many ?

Six and four are how many ?

Six and five are how many ?

Six and six are how many ?

Six and seven are how many ?

Six and eight are how many ?

Six and nine are how many ?

1. I had six marbles, and my brother gave me one more ; how many had I then ?

MODEL.—Six and one are seven ; hence, I had seven marbles then.

2. If I have six books in one hand, and two in the other, how many have I altogether ?

3. Charles gave six cents for an orange, and three cents for some nuts ; what did he spend for both ?

4. Emma said six good lessons one week, and four the next ; how many did she say both weeks ?

5. Susan's father gave her six new books, and her teacher gave her five ; how many did she have then ?

6. Lucy gave six cents for a spool of thread, and seven cents for a dozen buttons ; how many cents did she give for both ?

7. William gathered six quarts of chinapins, and Samuel gathered eight quarts; how many quarts did both gather?

8. If an ounce of figs cost six cents, and a quart of chestnuts cost nine cents, what will both cost?

§ 7. Seven and one are how many?

Seven and two are how many?

++++++ ++ ++++++

Seven and three are how many?

Seven and four are how many?

Seven and five are how many?

Seven and six are how many?

Seven and seven are how many?

Seven and eight are how many?

Seven and nine are how many?

A farmer had seven cows, and bo-

1. A farmer had seven cows, and bought two more; how many had he then?

MODEL.—Seven and two are nine; hence, he had nine cows then.

2. Alice had seven cents, and her brother gave her three more ; how many cents had she then ? .

3. I gave seven dollars for my coat, and four dollars for my vest; what did both garments cost?

4. There are seven sheep in one lot, and five in an other ; how many are in both lots ?

5. I gave seven dollars for a calf, and six dollars for a pig; what did I give for both animals?

6. If a firkin of butter cost seven dollars, and a barrel of vinegar cost eight dollars, what do both cost?

7. A man paid seven shillings for a night's lodging, and seven shillings for his horse's food; what did he pay for both?

8, I paid seven dollars freight on a barrel of sugar, and nine dollars on a barrel of molasses; what did I pay on both?

§ 8. Eight and one are how many?

++++++ + ++++++

Eight and two are how many?

++++++ ++ +++++++

Eight and three are how many?

Eight and four are how many?

Eight and five are how many?

Eight and six are how many?

Eight and seven are how many?

Eight and eight are how many?

Eight and nine are how many?

1. John owes one man eight dollars, and another one dollar; what does he owe them both?

MODEL.—Eight and one are nine; hence, he owes them both nine dollars.

2. Mary bought a slate for eight cents, and a pencil for two cents; what did she give for them both?

3. Jane has eight pins, and her sister has three; how many have they both?

4. Harry had eight cents, and his brother gave him four more; how many had he then?

5. James has eight apples, and John has five; how many have they both?

6. Pinckney is spelled with eight letters, and Sallie with six; how many letters in both their names?

7. Charles bought eight oranges, and James bought seven; how many have they both?

8. Sam gathered eight quarts of chestnuts, and Joe gathered nine; how many quarts did they both gather?

§ 9. Nine and one are how many ?

$$+++++++\quad +\quad ++++++++\quad +$$

Nine and two are how many ?

$$+++++++\quad ++\quad ++++++++\quad +$$

Nine and three are how many ?

Nine and four are how many ?

Nine and five are how many ?

Nine and six are how many ?

Nine and seven are how many ?

Nine and eight are how many ?

Nine and nine are how many ?

1. Mattie is nine years old ; how old will she be one year from this time ?

MODEL.—Nine and one are ten ; hence, she will then be ten years old.

2. A farmer picked nine bushels of apples from one tree, and three bushels from an other ; how many bushels did he pick from both ?

3. A man can earn nine dollars in a week, and his son can earn four dollars ; how much can they both earn ?

4. Father gave nine dollars for a set of chairs, and five dollars for a table ; what did she give for them both ?

5. Joshua is nine years old, and Joseph is six years older than he ; how old is Joseph ?

6. A man gave nine dollars for a barrel of flour, and seven dollars for a keg of lard ; what did he give for both ?

7. James gathered nine quarts of walnuts, and Alpheus gathered eight quarts ; how many quarts had they both ?

8. In a waiter there are nine red apples, and nine green ones ; how many are there in all ?

9. Robert bought a shot-gun for nine dollars, and a dog for five dollars ; how much did she give for them both ?

S U B T R A C T I O N

§ 10. One from two leaves how many ?

(\times) \times \times

One from three leaves how many ?

(\times) \times \times \times \times

One from four leaves how many ?

One from five leaves how many ?

One from six leaves how many ?

One from seven leaves how many ?

One from eight leaves how many ?

One from nine leaves how many ?

One from ten leaves how many ?

1. John had two apples, and gave one to his sister Mattie ; how many had he left ?

MODEL.—One from two leaves one ; hence, he had one apple left.

2. A beggar had three cents, and lost one ; how many cents had he left ?

3. I had four yards of cloth, but I cut off one yard to make a vest ; how many yards have I remaining ?

4. Joseph started to school with five apples, but he ate one on the way ; how many had he when he got there ?

5. Annie made six houses on her slate, and then rubbed one of them out ; how many houses did she leave on her slate ?

6. Jennie had seven sheets of paper, and gave Susan one of them ; how many sheets did she keep for herself ?

7. Mother had ten chickens, but the cat killed one of them ; how many chickens has mother now ?

§ 11. Two from three leaves how many?

$$(\times \times) \times \quad \quad \quad \times$$

Two from four leaves how many?

$$(\times \times) \times \times \quad \quad \quad \times \times$$

Two from six leaves how many?

Two from seven leaves how many?

Two from eight leaves how many?

Two from nine leaves how many?

Two from ten leaves how many?

Two from eleven leaves how many?

1. Agnes had five roses, and gave Ella two of them; how many did she keep for herself?

MODEL.—Two from five leaves three; hence, she kept three roses for herself.

2. Alice had six dollars, and lent two dollars to Ida; how many dollars did she retain for her own use?

3. Mr. Jones had seven tin pans, and sold two of them; how many had he left?

4. There were eight birds on a tree, and two of them flew away; how many were left on the tree?

5. There were nine passengers in the stage, but two of them got out; how many remained in the stage?

6. Johnny found ten eggs, but broke two before he brought them to his mother; how many did he bring to her?

7. Warren found a tree with eleven apples on it, and pulled them all but two; how many did he pull?

§ 12. Three from four leaves how many?

$$(\times \times \times) \times \quad \quad \quad \times$$

Three from five leaves how many?

$$(\times \times \times) \times \times \quad \quad \quad \times \times$$

Three from six leaves how many?

Three from seven leaves how many?

Three from eight leaves how many ?

Three from nine leaves how many ?

Three from ten leaves how many ?

Three from eleven leaves how many ?

Three from twelve leaves how many ?

1. If I make five marks on my slate, and rub out all but three of them, how many do I rub out ?

MODEL.—Three from five leaves two ; hence, I rub out two marks.

2. I gave six cents for a lead pencil, and sold it for three cents ; how much did I lose on it ?

3. Father had seven pigs, but a bad boy killed three of them ; how many has father now ?

4. Angus caught eight fish, and gave three of them to the miller's wife ; how many did he keep for himself ?

5. Carlos gathered nine quarts of hazel nuts, and sold three quarts of them ; how many quarts did he bring home ?

6. Carrie found a bush with ten roses on it, and pulled them all but three ; how many did she pull ?

7. Susan had twelve apples, and gave her sisters all but three ; how many did she give away ?

§ 13. Four from five leaves how many ?

($\times \times \times \times$) \times \times

Four from six leaves how many ?

($\times \times \times \times$) \times $\times \times$

Four from seven leaves how many ?

Four from eight leaves how many ?

Four from nine leaves how many ?

Four from ten leaves how many ?

Four from eleven leaves how many ?

Four from twelve leaves how many ?

Four from thirteen leaves how many ?

1. Mr. Jacobs had six acres of land, and gave four acres to his sons ; how many acres did he keep for himself ?

ModzL.—Four from six leaves two ; hence, he kept two acres for himself.

2. Mr. Carpenter made seven gallons of vinegar, and sold four gallons ; how many gallons had he left ?

3. Mr. Ramsour ground eight barrels of flour, and sold all but four barrels ; how many barrels did he sell ?

4. Mr. Rhyme brought nine bushels of potatoes to town, but sold only four bushels ; how many bushels did he take home ?

5. Mrs. Schrom made ten pounds of butter, and kept only four pounds for her own use ; how many pounds did she dispose of ?

6. Mr. Stowe had eleven yards of homespun, and sold four yards ; how much did he retain for his own use ?

7. Mr. Plonk had eleven bushels of wheat, and sold all but four bushels ; how much did he sell ?

§ 14. Five from six leaves how many !

($\times \times \times \times \times$) \times \times

Five from seven leaves how many ?

($\times \times \times \times \times$) $\times \times$ $\times \times$

Five from eight leaves how many ?

Five from nine leaves how many ?

Five from ten leaves how many ?

Five from eleven leaves how many ?

Five from twelve leaves how many ?

Five from thirteen leaves how many ?

Five from fourteen leaves how many ?

1. Mr. Wingate had eight gallons of sorghum syrup, and sold five gallons ; how much did he keep ?

MODEL.—Five from eight leaves three ; hence, he kept three gallons.

2. Mr. Collier had nine tons of coal, and retained five tons for his own use ; how many tons did he sell ?

3. Mr. Miller had ten children, five of whom were sons ; how many daughters had he ?

4. Mr. Tillett had eleven slaves, five of whom were women ; how many of them were men ?

5. Mr. Jenkins bought twelve bushels of sweet potatoes, and sold five bushels ; how many bushels did he keep ?

6. Mrs. Sumner went shopping with thirteen dollars, and brought five dollars home ; how much did she spend ?

7. Mr. Shuford hauled fourteen loads of wood, and sold five of them ; how many loads did he keep ?

§ 15. Six from seven leaves how many ?

$$(\times \times \times \times \times) \times \quad \times$$

Six from eight leaves how many ?

$$(\times \times \times \times \times) \times \times \quad \times \times$$

Six from nine leaves how many ?

Six from ten leaves how many ?

Six from eleven leaves how many ?

Six from twelve leaves how many ?

Six from thirteen leaves how many ?

Six from fourteen leaves how many ?

Six from fifteen leaves how many ?

1. A tallow-chandler made seven boxes of candles one day, and sold six boxes ; how many boxes did he keep ?

MODEL.—Six from seven leaves one ; hence, he kept one box.

2. A grocer bought nine casks of soda, and sold six casks ; how many casks had he left ?

3. A cutler made ten cases of knives and forks, and sold six cases ; how many cases had he left ?

4. A shoemaker made eleven pairs of shoes one week, and kept six pairs for his own family ; how many pairs did he sell ?

5. A hatter had twelve wool hats, and sold six of them ; how many did he keep ?

6. A coachmaker had thirteen buggies, and sent six of them off to market ; how many did he keep at home ?

7. A peddler bought fifteen pieces of calico ; after he had sold six pieces, how many had he left ?

§ 16. Seven from eight leaves how many ?

$(\times \times \times \times \times \times) \times \quad \times$

Seven from nine leaves how many ?

$(\times \times \times \times \times \times) \times \times \quad \times \times$

Seven from ten leaves how many ?

Seven from eleven leaves how many ?

Seven from twelve leaves how many ?

Seven from thirteen leaves how many ?

Seven from fourteen leaves how many ?

Seven from fifteen leaves how many ?

Seven from sixteen leaves how many ?

1. John had ten walnuts, and gave his sister seven of them ; how many had he left ?

MODEL.—Seven from ten leaves three , hence, he had three walnuts left.

2. James gathered eleven quarts of filberts, and sold seven quarts ; how many quarts did he keep ?

3. Thomas caught twelve fish, and they were all cat-fish but seven ; how many of them were cat-fish ?

4. Edward killed thirteen robins and larks together ; seven of them were robins ; how many were larks ?

5. Rufus found fourteen eggs, and they were all guinea-eggs but seven ; how many of them were guinea-eggs ?

6. Lawson caught fifteen rabbits in his traps, but seven of them got away ; how many did he have then ?

7. Joseph was sixteen years old ; Benjamin was seven years younger than he ; how old was Benjamin ?

§ 17. Eight from nine leaves how many ?

$$(\times \times \times \times \times \times \times) \times \quad \times$$

Eight from ten leaves how many ?

$$(\times \times \times \times \times \times \times) \times \times \quad \times \times$$

Eight from eleven leaves how many ?

Eight from twelve leaves how many ?

Eight from thirteen leaves how many ?

Eight from fourteen leaves how many ?

Eight from fifteen leaves how many ?

Eight from sixteen leaves how many ?

Eight from seventeen leaves how many ?

1. A man brought home eleven books, and gave eight of them to his children ; how many did he keep ?

MODEL.—Eight from eleven leaves three ; hence, he kept three books.

2. There were twelve girls in a class, and eight of them were sustained ; how many were disapproved ?

3. There were thirteen girls in a class, and all left school but eight ; how many of them left school ?

4. If there are fourteen little girls in school, and all but eight have the hooping cough, how many have it ?

5. If Susan brings fifteen apples to school, and gives eight of them away, how many has she left ?

6. Laura has read sixteen pages, all poetry but eight ; how many pages of poetry has she read ?

§ 18. Nine from ten leaves how many?

$$(\times \times \times \times \times \times \times \times) \times \quad \times$$

Nine from eleven leaves how many?

$$(\times \times \times \times \times \times \times \times) \times \times \quad \times \times$$

Nine from twelve leaves how many?

Nine from thirteen leaves how many?

Nine from fourteen leaves how many?

Nine from fifteen leaves how many?

Nine from sixteen leaves how many?

Nine from seventeen leaves how many?

Nine from eighteen leaves how many?

1. Arthur found ten partridge-eggs, and brought home nine of them ; how many did he leave in the nest ?

MODEL.—Nine from ten leaves one ; hence, he left one egg in the nest.

2. Benjamin bought eleven postage-stamps, and used nine of them ; how many had he left ?

3. Charles's father gave him twelve shillings, and he bought a knife for nine shillings ; how many shillings had he left ?

4. David made thirteen tops, and kept nine of them ; how many tops did he dispose of ?

5. Edward earned fourteen shillings one week, but spent nine shillings before the end of the week ; how many shillings had he Saturday night ?

6. Frank gathered fifteen quarts of chincapins, and gave nine quarts to his little brothers and sisters ; how many quarts had he left ?

7. George bought sixteen peaches, and sold them all but nine ; how many did he sell ?

8. Daniel had eighteen little lambs, but the dogs killed nine of them ; how many had he left ?

MULTIPLICATION

219. Twice one are two.

Twice two are four.

Twice three are six.

Twice four are eight.

Twice five are ten.

Twice six are twelve.

Twice seven are fourteen.

Twice eight are sixteen.

Twice nine are eighteen.

Twice ten are twenty.

1. If one apple is worth three cents, what are two apples worth?

MODEL.—Twice three are six; hence, two apples are worth six cents.

EXPLANATION.—Two apples are worth twice as much as one apple, that is, twice three cents, or six cents.

2. John bought two oranges at four cents apiece; what did he give for them both?

3. Henry gave his sister five cents, and Isaac gave her twice as much; how many cents did Isaac give her?

4. If flour sells at six dollars a barrel, what can I get for two barrels?

5. What is the cost of two bushels of wheat, at eight shillings a bushel?

6. Seven days make one week; how many days are there in two weeks?

7. What cost two dozen Arithmetics, at nine dollars a dozen?

220. Three times one are three.

Three times two are six.

Three times three are nine.

Three times four are twelve.

Three times five are fifteen.

Three times six are eighteen.

Three times seven are twenty-one.

Three times eight are twenty-four.

Three times nine are twenty-seven.

Three times ten are thirty.

1. What cost three yards of lace, at two cents a yard?

MODEL.—Three times two are six; hence, three yards cost six cents.

2. What cost three oranges, at four cents apiece?
3. If one barrel of corn is worth five dollars, what are three barrels worth?
4. If one ream of paper is worth six dollars, what cost three reams?
5. James sold three quarts of chestnuts, at seven cents a quart; how much did he get for them all?
6. What cost three pounds of mutton, at eight cents a pound?
7. A merchant sold three pairs of boots, at nine dollar a pair; what did he get for them all?

21. Four times one are four.
 Four times two are eight.
 Four times three are twelve.
 Four times four are sixteen.
 Four times five are twenty.

- Four times six are twenty-four.
 Four times seven are twenty-eight.
 Four times eight are thirty-two.
 Four times nine are thirty-six.
 Four times ten are forty.

1. If I walk three miles an hour, how far will I walk in four hours?

MODEL.—Four times three are twelve; hence, I will walk twelve miles in four hours.

2. If I give four dollars apiece for four hats, what do I give for them all?

3. What will cost four barrels of flour, at five dollars a barrel?

4. How many boys are there on four benches, if there are six boys on each bench?

5. How much will four yards of broad cloth cost, at seven dollars a yard?

6. What cost four quarts of beer, at eight cents a quart?

22. Five times one are five.
 Five times two are ten.
 Five times three are fifteen.
 Five times four are twenty.
 Five times five are twenty-five.

- Five times six are thirty.
 Five times seven are thirty-five.
 Five times eight are forty.
 Five times nine are forty-five.
 Five times ten are fifty.

1. A man gave his five children two shillings apiece; how much did he give them all?

MODEL.—Five times two are ten; hence, he gave them all ten shillings.

2. Mother has five rose-bushes with three roses on each; how many roses are there on them all?

3. If one bushel of wheat is worth four yards of domestic, how many yards of domestic are five bushels of wheat worth?

4. How much will five head of sheep cost, at five dollars a head?

5. At six shillings apiece, what will five Geographies cost?

6. At seven dollars a cord, what will five cords of wood cost?

7. Eight quarts make one peck; how many quarts are there in five pecks?

§23. Six times one are six.

Six times two are twelve.

Six times three are eighteen.

Six times four are twenty-four.

Six times five are thirty.

Six times six are thirty-six.

Six times seven are forty-two.

Six times eight are forty-eight.

Six times nine are fifty-four.

Six times ten are sixty.

1. If a family eat one bushel of corn every week, how many bushels will last them six weeks?

MODEL.—Six times one are six; hence, six bushels will last them in six weeks.

2. What will six bushels of wheat cost, at two dollars a bushel?

3. I bought six lead pencils, at three cents apiece; what did I give for them all?

4. What will six sheep cost, at six dollars a head?

5. If I get four head-marks a day for six days, how many will I have then?

6. Susan reads five hours every day ; how many hours does she read in six days ?

7. We have six classes in school, and six girls in each class ; how many girls are there in school ?

8. What will six pounds of sugar cost, at ten cents a pound ?

• 24. Seven times one are seven.

Seven times two are fourteen.

Seven times three are twenty-one.

Seven times four are twenty-eight.

Seven times five are thirty-five.

Seven times six are forty-two.

Seven times seven are forty-nine.

Seven times eight are fifty-six.

Seven times nine are sixty-three.

Seven times ten are seventy.

1. Seven boys went chestnut hunting, and gathered three quarts apiece ; how many quarts had they all ?

MODEL.—Seven times three are twenty-one ; hence, they all had twenty-one quarts.

2. John earns four dollars a week ; how much does he earn in seven weeks ?

3. At five dollars a head, what cost seven sheep ?

4. If a daily paper cost six dollars a year, what will seven subscriptions to it cost ?

5. There are seven days in a week ; how many days are there in seven weeks ?

6. At eight dollars a day, what will seven days' board amount to ?

7. What will seven yards of broadcloth cost, at nine dollars a yard ?

8. What will seven yards of calico cost, at seven cents a yard ?

• 25. Eight times one are eight.

Eight times two are sixteen.

Eight times three are twenty-four.

Eight times four are thirty-two.

Eight times five are forty.

Eight times six are forty-eight.

Eight times seven are fifty-six.

Eight times eight are sixty-four.

Eight times nine are seventy-two.

Eight times ten are eighty.

1. What will eight peaches cost, at two cents apiece ?

MODEL.—Eight times two are sixteen ; hence, they will cost sixteen cents.

2. What will eight dozen buttons cost, at three cents a dozen ?

3. What will eight bushels of corn cost, at four shillings a bushel ?

4. Susan gave five cents apiece to eight beggars ; how much did she give them all ?

5. How many roses are there on eight bushes, if there are six roses on each bush ?

6. A farmer sold eight tons of hay at seven dollars a ton ; what did he receive for his hay ?

7. A lady sold eight pounds of butter at ten cents a pound ; what did she get for it all ?

226. Nine times one are nine.

Nine times two are eighteen.

Nine times three are twenty-seven.

Nine times four are thirty-six.

Nine times five are forty-five.

Nine times six are fifty-four.

Nine times seven are sixty-three.

Nine times eight are seventy-two.

Nine times nine are eighty-one.

Nine times ten are ninety.

1. Susan bought nine dozen apples at three cents a dozen ; what did they cost her ?

MODEL.—Nine times three are twenty-seven ; hence, they cost her twenty-seven cents.

2. How many yards are there in nine pieces of cloth, if there are five yards in each piece ?

3. If I travel six miles an hour, how far will I travel in nine hours ?

4. What will nine barrels of flour cost, at seven dollars a barrel ?

5. What will nine gallons of sorghum cost, at eight shillings a gallon ?

6. If nine yards of calico will make sister Mattie a dress, what will a dress cost her, at nine cents a yard ?

D I V I S I O N

27. Two in two, once.	Two in twelve, six times.
Two in four, twice.	Two in fourteen, seven times.
Two in six, three times.	Two in sixteen, eight times.
Two in eight, four times.	Two in eighteen, nine times.
Two in ten, five times.	Two in twenty, ten times.

When a number is divided into two equal parts, each part is called one half of the number. Let the above table be recited also as follows:—

One is one half of two.	Six is one half of twelve.
Two is one half of four.	Seven is one half of fourteen.
Three is one half of six.	Eight is one half of sixteen.
Four is one half of eight.	Nine is one half of eighteen.
Five is one half of ten.	Ten is one half of twenty.

- At two cents apiece, how many peaches may be bought for eight cents?

MODEL.—The number of peaches is equal to the number of times two cents is contained in eight cents: two in eight, four times; hence, four peaches may be bought for eight cents.

- A man divided fourteen marbles equally between his two boys; how many did he give them apiece?

MODEL.—He gave each boy one half of fourteen marbles: seven is one half of fourteen; hence, he gave them seven marbles apiece.

- How many yards of ribbon at two cents a yard can I buy for six cents?

4. Silas brought ten apples to school, and gave them equally to his two class-mates; how many did he give to each?

- At two dollars a bushel, how much wheat can be bought for twelve dollars?

6. Last Christmas, mother divided eighteen oranges equally between sisters Mary and Jane; how many oranges did each of them receive?

228. Three in three, once.

Three in six, twice.

Three in nine, three times.

Three in twelve, four times.

Three in fifteen, five times.

Three in eighteen, six times.

Three in twenty-one, seven times.

Three in twenty-four, eight times.

Three in twenty-seven, nine times.

Three in thirty, ten times.

When a number is divided into three equal parts, each part is called one third of the number. Therefore,

One is one third of three.

Two is one third of six.

Three is one third of nine.

Four is one third of twelve.

Five is one third of fifteen.

Six is one third of eighteen.

Seven is one third of twenty-one.

Eight is one third of twenty-four.

Nine is one third of twenty-seven.

Ten is one third of thirty.

1. I spent fifteen dollars for corn at three dollars a barrel, how many barrels did I get?

MODEL.—The number of barrels is equal to the number of times three dollars is contained in fifteen dollars: three in fifteen, five times, hence, I got five barrels.

2. John, Andrew, and Peter gathered eighteen quarts of chestnuts; how many quarts apiece did they gather?

3. If a train of cars run one mile in three minutes, how far will it go in twenty-one minutes?

4. If three girls in a class answer twenty-four questions, how many does each one answer?

5. How many pounds of butter at three shillings a pound can be bought for twenty-seven shillings?

6. Joseph distributed thirty cents among three poor children; how many cents did he give them apiece?

229. Four in four, once.

Four in eight, twice.

Four in twelve, three times.

Four in sixteen, four times.

Four in twenty, five times.

Four in twenty-four, six times.

Four in twenty-eight, seven times.

Four in thirty-two, eight times.

Four in thirty-six, nine times.

Four in forty, ten times.

When a number is divided in four equal parts, each part is called one fourth of the number. Therefore,

- | | |
|--------------------------------|--------------------------------------|
| One is one fourth of four. | Six is one fourth of twenty-four. |
| Two is one fourth of eight. | Seven is one fourth of twenty-eight. |
| Three is one fourth of twelve. | Eight is one fourth of thirty-two. |
| Four is one fourth of sixteen. | Nine is one fourth of thirty-six. |
| Five is one fourth of twenty. | Ten is one fourth of forty. |

1. How many classes, of four pupils each, can be formed of twelve pupils?

MODEL.—The number of classes is equal to the number of times four pupils is contained in twelve pupils: four in twelve, three times; hence, three classes can be formed.

2. A class of four pupils made up twenty dollars to buy a present for their teacher; how much was that apiece?

3. A farmer distributed eight bushels of potatoes equally among four poor families; how many bushels did he give to each family?

4. How many primers, at four cents apiece, can you buy for twenty-four cents?

5. How many books, at four dollars a dozen, may you buy for twenty-eight dollars?

6. A laborer received thirty-six dollars for four weeks' work; how much was that each week?

-
- | | |
|----------------------------------|-----------------------------------|
| §30. Five in five, once. | Five in thirty, six times. |
| Five in ten, twice. | Five in thirty-five, seven times. |
| Five in fifteen, three times. | Five in forty, eight times. |
| Five in twenty, four times. | Five in forty-five, nine times. |
| Five in twenty-five, five times. | Five in fifty, ten times. |

When a number is divided into five equal parts, each part is called one fifth of the number. Therefore,

- | | |
|-----------------------------------|------------------------------------|
| One is one fifth of five. | Six is one fifth of thirty. |
| Two is one fifth of ten. | Seven is one fifth of thirty-five. |
| Three is one fifth of fifteen. | Eight is one fifth of forty. |
| Four is one fifth of twenty. | Nine is one fifth of forty-five. |
| Five is one fifth of twenty-five. | Ten is one fifth of fifty. |

1. How many dozen eggs, at five cents a dozen, can you buy for fifteen cents?

MODEL.—The number of dozen is equal to the number of times five cents is contained in fifteen cents; five in fifteen, three times; hence, three dozen eggs can be bought for fifteen cents.

2. How much broadcloth, at five dollars a yard, may be got for twenty dollars?

3. How many kegs, each holding five gallons, will be required to hold twenty-five gallons of vinegar?

4. At what price per barrel would thirty dollars buy five barrels of flour?

5. A gentleman divided thirty-five picture books equally among his five Sunday-school scholars; how many did each one get?

6. I gave forty-five cents for five spelling books; how much did I give apiece?

231. Six in six, once.

Six in twelve, twice.

Six in eighteen, three times.

Six in twenty-four four times.

Six in thirty, five times,

Six in thirty-six, six times.

Six in forty-two, seven times.

Six in forty-eight, eight times.

Six in fifty-four, nine times.

Six in sixty, ten times.

When a number is divided into six equal parts, each part is called one sixth of the number. Therefore,

One is one sixth of six.

Two is one sixth of twelve.

Three is one sixth of eighteen.

Four is one sixth of twenty-four.

Five is one sixth of thirty.

Six is one sixth of thirty-six.

Seven is one sixth of forty-two.

Eight is one sixth of forty-eight.

Nine is one sixth of fifty-four.

Ten is one sixth of sixty.

1. John earned thirty shillings in six days; how much did he earn each day?

MODEL.—He earned each day one sixth of thirty shillings: five is one sixth of thirty; hence, he earned five shillings each day.

2. How long would it take to go twenty-four miles, at six miles an hour?

3. If starch sells at six cents a pound, how much may be bought for forty-eight cents?

4. If you read six chapters of the Bible every day, how long would you be in reading forty-two chapters?

5. A good little girl memorized fifty-four stanzas in six weeks; how many stanzas did she memorize each week?

6. Mattie requires six yards of gingham to make a dress; she paid sixty cents for a dress pattern; what was it a yard?

32. Seven in seven, once.

Seven in fourteen, twice.

Seven in twenty-one, three times.

Seven in twenty-eight, four times.

Seven in thirty-five, five times.

Seven in forty-two, six times.

Seven in forty-nine, seven times.

Seven in fifty-six, eight times.

Seven in sixty-three, nine times.

Seven in seventy, ten times.

When a number is divided into seven equal parts, each part is called one seventh of the number. Therefore,

One is one seventh of seven.

Two is one seventh of fourteen.

Three is one seventh of twenty-one.

Four is one seventh of twenty-eight.

Five is one seventh of thirty-five.

Six is one seventh of forty-two.

Seven is one seventh of forty-nine.

Eight is one seventh of fifty-six.

Nine is one seventh of sixty-three.

Ten is one seventh of seventy.

1. If seven boys sit on a bench, how many benches will be required for twenty-one boys?

MODEL.—The number of benches is equal to the number of times seven boys is contained in twenty-one boys: seven in twenty-one, three times; hence, three benches will be required for twenty-one boys.

2. If seven yards of ribbon cost forty-nine cents, what does one yard cost?

3. Mr. Goodman gave thirty-five marbles to his seven children; how many did he give them apiece?

4. A stage-coach runs forty-two miles in seven hours; how many miles an hour does it run?

5. In a school of fifty-six pupils, there are seven pupils in each class; how many classes are there?

6. I gave seventy cents for seven yards of domestics; what was that a yard?

233. Eight in eight, once.	Eight in forty-eight, six times.
Eight in sixteen, twice.	Eight in fifty-six, seven times.
Eight in twenty-four, three times.	Eight in sixty-four, eight times.
Eight in thirty-two, four times.	Eight in seventy-two, nine times.
Eight in forty, five times.	Eight in eighty, ten times.

When a number is divided into eight equal parts, each part is called one eighth of the number. Therefore,

One is one eighth of eight.	Six is one eighth of forty-eight.
Two is one eighth of sixteen.	Seven is one eighth of fifty-six.
Three is one eighth of twenty-four.	Eight is one eighth of sixty-four.
Four is one eighth of thirty-two.	Nine is one eighth of seventy-two.
Five is one eighth of forty.	Ten is one eighth of eighty.

1. If eight head of sheep cost twenty-four dollars, what does one sheep cost?

MODEL.—One sheep costs one eighth of twenty-four dollars; three is one eighth of twenty-four; hence, one sheep costs three dollars.

2. If eight work hands eat sixteen pounds of meat in a day, how much does one hand eat?

234. Nine in nine, once.	Nine in fifty-four, six times.
Nine in eighteen, twice.	Nine in sixty-three, seven times.
Nine in twenty-seven, three times.	Nine in seventy-two, eight times.
Nine in thirty-six, four times.	Nine in eighty-one, nine times.
Nine in forty-five, five times.	Nine in ninety, ten times.

When a number is divided into nine equal parts, each part is called one ninth of the number. Therefore,

One is one ninth of nine.	Six is one ninth of fifty-four.
Two is one ninth of eighteen.	Seven is one ninth of sixty-three.
Three is one ninth of twenty-seven.	Eight is one ninth of seventy-two.
Four is one ninth of thirty-six.	Nine is one ninth of eighty-one.
Five is one ninth of forty-five.	Ten is one ninth of ninety.

1. At nine dollars a yard, how much cloth will cost twenty-seven dollars?

MODEL.—The number of yards is equal to the number of times nine dollars is contained in twenty-seven dollars: nine in twenty-seven, three times; hence, three yards will cost twenty-seven dollars.

2. If I divide forty-five apples equally among nine girls, how many apples will each girl receive?

PART II

NOTATION AND ADDITION

§ 35. Numbers are represented by figures.

The number one is represented by the figure	1.
" " two "	2.
" " three "	3.
" " four "	4.
" " five "	5.
" " six "	6.
" " seven "	7.
" " eight "	8.
" " nine "	9.

These nine figures, together with one other, 0, naught, may be combined so as to represent all the numbers in existence. The methods of combining them will be explained as we progress.

1. Father paid 2 dollars for a cord of wood, 3 dollars for a load of hay, and 8 dollars for a pig; what did he give for them all?

MODEL.—2 and 3 are 5, and 8 are thirteen; hence, he gave thirteen dollars for them all.

2. Mr. Joiner sold a set of chairs for 5 dollars, a work-stand for 7 dollars, and a center-table for 9 dollars; what did he get for them all?

3. Mr. Carpenter made me a set of sash for 4 dollars, furnished the glass for 5 dollars, and charged 3 dollars for putting them in; what was the whole of his bill?

4. A provision train went 6 miles one day, 7 miles the next day, and 8 miles the next day; how far did it go in the three days?

5. Lucy gave 5 cents for a spool of thread, 8 cents for a paper of needles, and 9 cents for a thimble; what did she give for them all?

6. A shepherd has 8 sheep in one lot, 9 sheep in another, and 7 sheep in a third; how many has he in all?

§36.	Ten is denoted	10.	Fifteen is denoted	15.
	Eleven "	11.	Sixteen "	16.
	Twelve "	12.	Seventeen "	17.
	Thirteen "	13.	Eighteen "	18.
	Fourteen "	14.	Nineteen "	19.

1. There are 12 girls in the first class, 9 girls in the second, and 8 girls in the third; how many girls are in those three classes?

2. John brought his mother 14 walnuts, Willie brought her 8, and Lee brought her 6; how many walnuts did they all bring?

3. A drover bought 15 cows from one man, 5 from another, and 7 from another; how many did he buy from them all?

4. Thomas had 3 quarts of hazel nuts, Robert gave him 6 quarts more, and Joseph gave him 9 quarts more; how many had he then?

5. A laborer earned 8 dollars one week, 7 dollars the next, and 9 dollars the next; how much did he earn in all?

6. Sue wrote 7 lines one day, Sallie wrote 6 lines, and Mary wrote 8 lines; how many lines did they all write?

§37.	Twenty is denoted	20.	Twenty-five is denoted	25.
	Twenty-one "	21.	Twenty-six "	26.
	Twenty-two "	22.	Twenty-seven "	27.
	Twenty-three "	23.	Twenty-eight "	28.
	Twenty-four "	24.	Twenty-nine "	29.

1. John bought a knife for 27 cents, a top for 8 cents, and a whip for 10 cents; what did he give for them all?
2. A workman sold a hand-cart for 28 dollars, and a wheelbarrow for 8 dollars; what did he receive for them both?
3. A small farmer raised 27 bushels of wheat on one lot, and 9 bushels on another; what did he raise on both?
4. A man bought 24 dollars' worth of wheat, 9 dollars' worth of corn, and 8 dollars' worth of pork; what did he pay for all?
5. A lady gave 27 dollars for a silk dress, 8 dollars for trimming, and 5 dollars for making it; what did her dress cost her?
6. Charles gave 22 cents for a Primary Arithmetic, 10 cents for a Spelling Book, and 8 cents for a copy-book; what did the three cost him?

38.	Thirty is denoted	30.	Thirty-five is denoted	35.
	Thirty-one "	31.	Thirty-six "	36.
	Thirty-two "	32.	Thirty-seven "	37.
	Thirty-three "	33.	Thirty-eight "	38.
	Thirty-four "	34.	Thirty-nine "	39.

1. There are 31 sheep in one pasture, and 10 in the other; how many are there in both?
2. A bookseller sold 36 Arithmetics, 9 Grammars, and 8 Readers; how many books did he sell in all?
3. A housekeeper spent 35 dollars for flour, 8 dollars for meal, and 7 dollars for vegetables; what did they all amount to?
4. Deuteronomy has 34 chapters, Ezra 10 chapters, and Lamentations 5 chapters; how many chapters are there in these three books?
5. Mr. Jones is 37 years old, his son John is 9 years old, and his daughter Ella 6; what do their ages all amount to?

6. Sallie called to visit her country cousin, and spent the last 10 days of June, the whole of July, and the first 6 days of August ; how long was her visit ?

39. Forty is denoted	40.	Fifty is denoted	50.
Forty-one "	41.	Fifty-one "	51.
Forty-two "	42.	Fifty-two "	52.
Forty-three "	43.	Fifty-three "	53.
Forty-four "	44.	Fifty-four "	54.
Forty-five "	45.	Fifty-five "	55.
Forty-six "	46.	Fifty-six "	56.
Forty-seven "	47.	Fifty-seven "	57.
Forty-eight "	48.	Fifty-eight "	58.
Forty-nine "	49.	Fifty-nine "	59.

1. A merchant collected 45 dollars from one customer, and 9 dollars from an other ; how much did he collect from both ?

2. Mr. Tiller gave 48 dollars for a carry-all, and 8 dollars for a set of harness ; what did he give for them both ?

3. A grocer sold one customer 50 pounds of sugar, an other 10 pounds, and a third 6 pounds ; how many pounds did he sell to the three ?

4. A merchant had four customers one day ; from one he received 55 dollars, from an other 3 dollars, from an other 7 dollars, and from the other 8 dollars ; what did he receive that day ?

5. Mattie's dress cost 56 cents, the trimming cost 9 cents, and the thread and buttons 8 cents ; what did it all cost ?

6. Bought butter for 54 cents, eggs for 10 cents, and fruit for 8 cents ; what did they all cost ?

7. A bookseller sold to a teacher 48 Grammars, 7 Arithmetics, and 9 Spelling Books ; how many books did he sell ?

8. A farmer sold a horse for 55 dollars, and a cow for 9 dollars ; what did he get for both ?

9. An orchard contains 58 apple trees, 8 pear trees, and 7 cherry trees ; how many trees are in the orchard ?

#40. Sixty is denoted	60.	Seventy is denoted	70.
Sixty-one "	61.	Seventy-one "	71.
Sixty-two "	62.	Seventy-two "	72.
Sixty-three "	63.	Seventy-three "	73.
Sixty-four "	64.	Seventy-four "	74.
Sixty-five "	65.	Seventy-five "	75.
Sixty-six "	66.	Seventy-six "	76.
Sixty-seven "	67.	Seventy-seven "	77.
Sixty-eight "	68.	Seventy-eight "	78.
Sixty-nine "	69.	Seventy-nine "	79.

1. Joseph gave 60 cents for a pen-knife, and 15 cents for a whip; what did he give for them both?

2. Josephine bought a handkerchief for 70 cents, some hooks and eyes for 17 cents, and some lace for 9 cents; what did she give for them all?

3. Laura bought a gross of steel pens for 75 cents, a quire of paper for 18 cents, and a pack of envelopes for 10 cents; what did she give for them all?

4. Mr. Hauser gave 77 dollars for a barrel for sugar, and had to pay 3 dollars for the barrel, and 15 dollars freight on it; what did the whole cost him?

5. Mr. Plowman gave 78 dollars for a yoke of oxen, and 25 dollars for a cart and fixtures; what did he give for both?

#41. Eighty is denoted	80.	Ninety is denoted	90.
Eighty-one "	81.	Ninety-one "	91.
Eighty-two "	82.	Ninety-two "	92.
Eighty-three "	83.	Ninety-three "	93.
Eighty-four "	84.	Ninety-four "	94.
Eighty-five "	85.	Ninety-five "	95.
Eighty-six "	86.	Ninety-six "	96.
Eighty-seven "	87.	Ninety-seven "	97.
Eighty-eight "	88.	Ninety-eight "	98.
Eighty-nine "	89.	Ninety-nine "	99.

1. I sold some pork for 83 dollars, and some potatoes for 15 dollars; what did I get for them both?

2. I bought a horse for 90 dollars, and a cow for 17 dollars; what did the two cost me?

3. I laid out 85 dollars for sugar, and 13 dollars for tea ; how much did I lay out ?
4. Mrs. Puny weighs 89 pounds, and her child weighs 10 pounds ; what is their united weight ?
5. A farmer sold 81 sheep and had only 18 left ; how many had he at first ?
6. Mr. Truly sold 80 bushels of wheat, gave 8 bushels to soldiers' wives, and laid aside 12 bushels for seed ; how much of his crop did he dispose of in these ways ?

NOTATION AND SUBTRACTION

242. One hundred	is denoted	100.
One hundred and one	"	101.
One hundred and two	"	102.
One hundred and three	"	103.
One hundred and four	"	104.
One hundred and five	"	105.
One hundred and six	"	106.
One hundred and ten	"	110.
One hundred and eleven	"	111.
One hundred and seventeen	"	117.
One hundred and twenty	"	120.
One hundred and thirty-one	"	131.
One hundred and forty-four	"	144.
One hundred and fifty-eight	"	158.
One hundred and seventy-two	"	172.
One hundred and eighty-five	"	185.
One hundred and ninety-nine	"	199.

Write one hundred and five, one hundred and sixteen, one hundred and thirty-five, one hundred and forty-nine, one hundred and seventy-five.

Read 112, 107, 125, 179, 188, 193.

1. A man went to town with 113 dollars, and spent all he had but 9 dollars ; how much money did he spend ?

MODEL.—9 from 113 leaves 104; hence, he spent 104 dollars.

2. A farmer raised 127 bushels of wheat, and reserved 11 bushels for seed; how much had he besides?

3. A man bought a buggy for 135 dollars, and sold it at a loss of 13 dollars; how much did he get for it?

4. Miss Sallie Brown went off to a boarding school with 145 dollars, and had only 8 dollars left at the end of the session; what were the session's expenses?

5. Little Johnny's book has 156 pages, and he has read all but 9 pages; how many pages has he read?

6. Mr. Planter raised 180 bushels of ground peas, and kept 15 bushels for his own use; how many bushels did he dispose of?

243. Two hundred	is denoted	200.
Two hundred and one	"	201.
Two hundred and five	"	205.
Two hundred and ten	"	210.
Two hundred and fifteen	"	215.
Two hundred and twenty-five	"	225.
Two hundred and thirty-seven	"	237.
Two hundred and forty-nine	"	249.
Two hundred and sixty-six	"	266.
Two hundred and seventy-five	"	275.
Two hundred and eighty	"	280.
Two hundred and ninety-eight	"	298.

Write two hundred and three, two hundred and eleven, two hundred and twenty-two, two hundred and thirty, two hundred and fifty-five, two hundred and seventy-seven.

Read 207, 214, 228, 235, 244, 258, 297.

1. Mr. Smith sold a horse for 225 dollars, and gained 15 dollars by the bargain; what did the horse cost him?

2. Mr. Coulter raised 200 bushels of corn, and paid 9 bushels tax; how much had he left?

3. Mr. Finger made 215 gallons of sorghum, and lost 11 gallons by leakage; how many gallons had he left?

4. Mr. Carpenter raised 100 bushels of wheat on one field, and 125 bushels on an other; he paid 20 bushels for having it threshed; how much had he remaining?

341. Three hundred	is denoted	300.
Three hundred and three	"	303.
Three hundred and fifteen	"	315.
Three hundred and twenty-one	"	321.
Three hundred and thirty-three	"	333.
Three hundred and fifty-six	"	356.
Three hundred and eighty-nine	"	389.

Write three hundred and one, three hundred and ten, three hundred and seventeen, three hundred and thirty, three hundred and forty-three, three hundred and sixty-six.

Read 308, 313, 327, 349, 352, 390, 399.

1. I had 325 dollars, but I had to pay 12 dollars tax on it; how much money had I left?

2. A traveler, whose journey was 350 miles, has finished it all but 20 miles; how far has he gone?

3. Susan has read all but 15 pages of a book of 368 pages; how many pages has she read?

4. A grocer bought a barrel of sugar weighing 376 pounds gross; the barrel weighed 14 pounds; how many pounds of sugar did he buy?

345. Four hundred	is denoted	400.
Four hundred and four	"	404.
Four hundred and seven	"	407.
Four hundred and fourteen	"	414.
Four hundred and forty.	"	440.
Four hundred and forty-four	"	444.
Four hundred and fifty-four	"	454.

Write four hundred and seventeen, four hundred and

twenty-eight, four hundred and thirty-nine, four hundred and eighty, four hundred and ninety-six.

Read 418, 422, 430, 449, 456, 478, 487.

1. A farmer raised 420 bushels of corn, and sent 25 bushels to his pastor; how many bushels had he left?
 2. A man took 450 dollars to town, but spent only 16 dollars; how much did he bring home?
 3. A butcher killed a beef weighing 418 pounds, and kept 16 pounds for his own use; how much did he sell?
 4. A trader sold a pair of horses for 435 dollars, and gained 15 dollars by the trade; what did the horses cost him?
-

§46. Five hundred	is denoted	500.
Five hundred and five	"	505.
Five hundred and fifteen	"	515.
Five hundred and fifty	"	550.
Five hundred and fifty-five	"	555.
Five hundred and forty-nine	"	549.
Five hundred and eighty-seven	"	587.

Write five hundred and eighteen, five hundred and six, five hundred and twenty-seven, five hundred and forty-nine, five hundred and sixty-eight, five hundred and ninety-four.

Read 507, 509, 575, 524, 536, 547, 563, 585.

1. A man, who had 504 acres of land, sold 24 acres; how much had he remaining?
2. A farmer raised 100 bushels of corn at one plantation, and 427 bushels at an other; he sent 26 bushels to mill; how much had he left?
3. My Philosophy has 586 pages, and I lack only 32 pages of being through it; how many pages have I studied?
4. I sold a carriage for 550 dollars, and thereby gained 47 dollars; what did it cost me?

747. Six hundred	is denoted	600.
Six hundred and six	"	606.
Six hundred and sixteen	"	616.
Six hundred and ninety-nine	"	699.
Seven hundred	"	700.
Seven hundred and seven	"	707.
Seven hundred and seventy-seven	"	777.
Seven hundred and eighty-four	"	784.

Write six hundred and thirty-four, six hundred and forty-three, six hundred and fifty-seven, six hundred and seventy-five, seven hundred and fifty-six, seven hundred and sixty-five, seven hundred and ninety-nine.

Read 626, 662, 638, 683, 741, 714, 729, 792.

1. I am reading a History in two volumes; the first volume has 400 pages, and the second has 350; I am within 45 pages of being through the second volume; how many pages have I read?

2. Brother John is reading the same History, and has 30 pages of the first volume yet to read; how many pages has he to read in all?

3. James gathered 425 chincapins yesterday, and gave away 25; to-day he has gathered 300 more; how many has he now?

4. Mr. Sykes sold 47 acres from a tract of 650 acres; how much land had he remaining?

748. Eight hundred	is denoted	800.
Eight hundred and one	"	801.
Eight hundred and eight	"	808.
Eight hundred and eighteen	"	818.
Nine hundred	"	900.
Nine hundred and nineteen	"	919.
Nine hundred and ninety	"	990.
Nine hundred and ninety-nine	"	999.

Write eight hundred and fifteen, eight hundred and fifty-one, eight hundred and forty-seven, eight hundred and ~~sev-~~

enty-four, nine hundred and sixty-three, nine hundred and seventy-nine, nine hundred and ninety-seven.

Read 823, 832, 849, 894, 948, 984, 957, 975.

1. There are 929 chapters in the Old Testament; Zechariah has 14 chapters, and Malachi 4; sister Susan has read all but these two books; how many chapters has she read?

2. There are 150 Psalms in the Bible; how many chapters are there in the Old Testament besides the Psalms?

3. The New Testament has 260 chapters; the Revelation has 22; how many chapters are in all the other books?

4. Mattie has read the book of Matthew, which has 28 chapters; how many more chapters has she to read?



NOTATION AND MULTIPLICATION.

§49. One thousand	is denoted	1000.
One thousand and one	"	1001.
One thousand and eleven	"	1011.
One thousand one hundred and one	"	1101.
One thousand one hundred and ten	"	1110.
One thousand two hundred and eleven	"	1211.
One thousand seven hundred and seventeen	"	1717.
One thousand nine hundred and ninety-nine	"	1999.

Write one thousand one hundred and forty, one thousand two hundred and twenty-five, one thousand four hundred and seventy-nine, one thousand and ninety seven, one thousand six hundred and sixty-one, one thousand one hundred and sixty-six, one thousand six hundred and sixteen.

Read 1007, 1207, 1220, 1203, 1033, 1330, 1429, 1492.

1. What cost 7 yards of lace, at 3 cents a yard?

MODEL.—7 times 3 are 21; hence, 7 yards cost 21 cents,

EXPLANATION.—7 yards cost 7 times as much as one yard, that is, 7 times 3 cents, or 21 cents.

Note.—Be careful not to allow the pupil to say 3 times 7, for 7 times 3.

2. What cost 3 quarts of chestnuts, at 8 cents a quart?

3. If 1 yard of cloth cost 5 dollars, what will 5 yards cost?

4. I bought 4 barrels of flour, at 7 dollars a barrel; what did I pay for the four?

250. Two thousand	is denoted	2000.
Two thousand and one	"	2001.
Two thousand and two	"	2002.
Two thousand and twenty	"	2020.
Two thousand and twenty-two	"	2022.
Two thousand two hundred and twenty	"	2220.
Two thousand three hundred and twenty-five	"	2325.
Two thousand four hundred and thirty-six	"	2436.

Write two thousand five hundred and forty, two thousand six hundred and sixty, two thousand seven hundred and ninety-five, two thousand eight hundred and fifty, two thousand nine hundred and seventy-seven, two thousand seven hundred and twenty-seven.

Read 2037, 2203, 2209, 2902, 2092, 2370, 2437, 2307.

1. What cost 4 yards of calico, at 8 cents a yard?
2. What cost 7 quarts of chestnuts, at 5 cents a quart?
3. Bought 9 dozen apples, at 4 cents a dozen; what did they cost?

4. I gave 5 dollars a yard for 6 yards of cloth; what did I give for it all?

5. What should I give for 4 Primary Arithmetics, at 9 cents apiece?

251. Three thousand	is denoted	3000.
Three thousand and three	"	3003.
Three thousand and thirty	"	3030.
Three thousand three hundred	"	3300.
Three thousand three hundred and three	"	3303.
Three thousand three hundred and thirty-nine	"	3339.
Three thousand six hundred and thirty-nine	"	3639.
Three thousand eight hundred and twenty-seven	"	3827.

Write three thousand four hundred and eighty-seven, three thousand five hundred and five, three thousand and seventy, three thousand and nine, three thousand two hundred and ninety-nine, three thousand one hundred and four, three thousand nine hundred and ninety-nine.

Read 3456, 3645, 3564, 3465, 3329, 3932, 3093, 3009.

1. Laura bought 4 spelling books, at 10 cents apiece; what did the four cost?
 2. James gathered 7 quarts of chestnuts every day for 6 days; how many quarts had he in all?
 3. Susan bought 5 dresses, of 9 yards each; how many yards were in them all?
 4. Joseph read 7 chapters in the Bible every day for a week; how many chapters did he read in all?
 5. Saul was sick 7 whole weeks; how many days was he sick?
-

252. Four thousand	is denoted	4000.
Four thousand and four	"	4004.
Four thousand and ten	"	4010.
Four thousand and forty	"	4040.
Four thousand five hundred and fifty	"	4550.
Four thousand and fifty-six	"	4056.
Four thousand and eighty-nine	"	4089.
Four thousand seven hundred and seventy-six	"	4776.

Write four thousand and nine, four thousand three hundred, four thousand and seventy, four thousand and seventy-nine, four thousand seven hundred and eight, four thou-

sand three hundred and six, four thousand one hundred and one, four thousand seven hundred and seventeen.

Read 4007, 4014, 4125, 4236, 4247, 4458, 4569, 4670.

1. A man gave his 7 children 8 apples apiece; how many did he give them all?

2. If our school fills 8 benches with 7 girls on a bench, how many girls are there in school?

3. Lucy gave 9 cents a yard for 6 yards of calico; how much did she give for it all?

253. Five thousand	is denoted	5000.
Five thousand and one	"	5001.
Five thousand and eleven	"	5011.
Five thousand and twenty	"	5020.
Five thousand one hundred	"	5100.
Five thousand five hundred and fifty	"	5550.
Five thousand and fifty-five	"	5055.
Five thousand six hundred and eighteen	"	5618.

Write five thousand three hundred and seventy-five, five thousand seven hundred and nine, five thousand six hundred and eighty-nine, five thousand seven hundred and twelve, five thousand three hundred and forty-eight, five thousand eight hundred and seventy.

Read 5516, 5716, 5671, 5167, 5896, 5089, 5908, 5895.

1. Joseph bought 6 copy-books, at 10 cents apiece; what did he give for them all?

2. Lawrence sold 10 quarts of blackberries, at 6 cents a quart; what did he receive for them all?

3. Father bought 7 yards of broadcloth, at 7 dollars a yard; what did it all cost him?

4. Mother gave 7 cents a dozen for 9 dozen eggs; what did she give for them all?

5. Jonathan bought 5 Primers, at 11 cents apiece; how much did he pay for them all?

254. Six thousand	is denoted	6000.
Six thousand and one	"	6001.
Six thousand and six	"	6006.
Six thousand and twenty-two	"	6022.
Seven thousand one hundred and three	"	7103.
Seven thousand two hundred and thirty-two	"	7232.
Seven thousand seven hundred and eighty-seven	"	7787.

Write six thousand two hundred and seventy, six thousand three hundred and eight, six thousand one hundred and ten, six thousand and ninety-nine, seven thousand five hundred and seventy-five, seven thousand and seventy, seven thousand seven hundred, seven thousand eight hundred and eighty-nine.

Read 6125, 6250, 6361, 6472, 7132, 7243, 7354, 7465.

1. If 7 boys gather 10 quarts of chestnuts apiece, how many quarts do they all gather?
 2. Susan bought a calico dress containing 9 yards, at 8 cents a yard; what did her dress cost?
 3. Thomas traveled 8 hours at 9 miles an hour; how far did he travel?
 4. How many persons are there in 10 families, if there are 7 persons in each?
-

255. Eight thousand	is denoted	8000.
Eight thousand and eight	"	8008.
Eight thousand and eighty	"	8080.
Eight thousand and seventy-five	"	8075.
Nine thousand one hundred	"	9100.
Nine thousand two hundred and one	"	9201.
Nine thousand three hundred and twelve	"	9112.
Nine thousand four hundred and twenty-three	"	9423.

Write eight thousand one hundred and two, eight thousand two hundred and thirteen, eight thousand three hundred and twenty-four, eight thousand four hundred and thirty-five, nine thousand five hundred and forty-six, nine thousand six hundred and fifty-seven, nine thousand seven

hundred and sixty-eight, nine thousand eight hundred and seventy-nine.

Read 8947, 8836, 8725, 8614, 9503, 9492, 9381, 9270.

1. If I work 9 hours a day for 9 days, how many hours do I work?
2. John sold 8 quarts of ground-peas, at 10 cents a quart; what did he receive for them?
3. What pay does a man receive for 10 days' service, at 8 dollars a day?
4. What will 9 months' board amount to, at 10 dollars a month?
5. What cost 10 dozen Arithmetics, at 9 dollars a dozen?



NOTATION AND DIVISION

256. Ten thousand	is denoted	10000.
Ten thousand and one	"	10001.
Ten thousand and ten	"	10010.
Ten thousand one hundred	"	10100.
Eleven thousand	"	11000.
Twelve thousand one hundred	"	12100.
Thirteen thousand two hundred and ten	"	13210.
Fourteen thousand three hundred and twenty-one	"	14321.

Write nineteen thousand and ninety-eight, eighteen thousand seven hundred and eighty-seven, seventeen thousand five hundred and seventy-six, sixteen thousand three hundred and sixty-five, fifteen thousand one hundred and fifty-four, fourteen thousand nine hundred and forty-three, thirteen thousand seven hundred and thirty-two, twelve thousand five hundred and twenty.

Read 12345, 15878, 10102, 11435, 14768, 17091, 10324.

1. At 6 dollars a yard, how much cloth can be bought for 24 dollars?

MODEL.—The number of yards is equal to the number of times 6 dollars is contained in 24 dollars: 6 in 24, 4 times; hence, 4 yards can be bought for 24 dollars.

2. A lady divided 21 apples equally among her 7 children; how many apples did each child receive?

MODEL—Each child received one seventh of 21 apples: 3 is one seventh of 21; hence, each child received 3 apples.

3. At 8 dollars a barrel, how many barrels of flour may be bought for 24 dollars?

4. I spent 27 dollars for Latin Grammars, at 9 dollars a dozen; how many dozen did I get?

5. If I give 28 dollars for 7 cords of wood, how much do I give per cord?

6. If 5 barrels of corn cost 25 dollars, what does 1 barrel cost?

257. Twenty thousand	is denoted	20000.
Twenty thousand two hundred	"	20200.
Twenty-two thousand four hundred and one	"	22401.
Twenty-three thousand five hundred and thirteen	"	23513.
Thirty-four thousand six hundred and twenty-five	"	34625.
Thirty-five thousand seven hundred and thirty-seven	"	35737.
Thirty-six thousand eight hundred and forty-nine	"	36849.
Thirty-seven thousand nine hundred and fifty.	"	37950.

Write twenty-nine thousand six hundred and forty-five, twenty-eight thousand five hundred and thirty-four, twenty-seven thousand three hundred and twelve, twenty-five thousand one hundred and ninety, thirty-six thousand two hundred and ten, thirty-four thousand and ninety-five, thirty-three thousand nine hundred and seventy-three, thirty-one thousand seven hundred and fifty-one.

Read 20125, 21236, 22347, 23458, 35469, 36570, 37681, 38792, 34975, 37384.

1. At 10 cents apiece, how many oranges can you buy for 40 cents?

2. At 8 cents a yard, how many yards of calico can you buy for 40 cents?
3. At 5 miles an hour, how long will it take to go 35 miles?
4. At 4 dollars a cord, how many cords of wood can you buy for 32 dollars?
5. At 9 dollars a month, how long could you board for 36 dollars?
-

§58. Forty thousand	is denoted	40000.
Forty thousand and forty	"	40040.
Forty thousand four hundred	"	40400.
Forty-four thousand and four	"	44004.
Fifty thousand one hundred and five	"	50105.
Fifty-one thousand two hundred and sixteen	"	51216.
Fifty-two thousand three hundred and twenty-seven	"	52327.
Fifty-four thousand five hundred and forty-nine.	"	54549.

Write forty thousand three hundred and twenty one, forty-three thousand six hundred and fifty-four, forty-six thousand nine hundred and eighty-seven, forty-nine thousand two hundred and ten, fifty-two thousand five hundred and forty-three, fifty-five thousand eight hundred and seventy-six, fifty-eight thousand one hundred and nine, fifty-one thousand four hundred and thirty-two.

Read 41432, 44765, 47098, 40321, 53656, 56987, 59210.

- How long would it take to travel 40 miles, at 5 miles an hour?
- How many yards of broadcloth, at 9 dollars a yard, may be bought for 45 dollars?
- If 7 cords of wood cost 42 dollars, what does 1 cord cost?
- If 6 Spelling Books cost 48 cents, what does one cost?
- If a boy divides 49 apples equally among his 7 classmates, how many does he give them each?

259. Sixty thousand	is denoted	60000.
Sixty-two thousand	"	62000.
Sixty-four thousand one hundred	"	64100.
Sixty-six thousand three hundred and twenty	"	66320.
Seventy-eight thousand five hundred and forty-three	"	78543.
Seventy thousand seven hundred and sixty-five	"	70765.
Seventy-two thousand nine hundred and eighty-seven	"	72987.
Seventy-four thousand one hundred and nine	"	74109.

Write sixty-five thousand four hundred and thirty-two, sixty-six thousand five hundred and forty-three, sixty-seven thousand six hundred and fifty-four, sixty-eight thousand seven hundred and sixty-five, seventy-nine thousand eight hundred and seventy-six, seventy thousand nine hundred and eighty-seven, seventy-one thousand and ninety-eight, seventy-two thousand one hundred and nine.

Read 63579, 64680, 66802, 67913, 78024, 79135, 70246.

1. Sallie gave 50 cents to 10 poor children equally; how much did she give them apiece?
 2. A school of 54 girls is divided into 6 equal classes; how many girls are in each class?
 3. A farmer made 56 bushels of corn from 7 equal rows; how many bushels did he make from each row?
 4. If 8 boys gather 56 quarts of hazel nuts, how many quarts does each boy gather?
-

260. Eighty thousand	is denoted	80000.
Eighty-two thousand and two	"	82002.
Eighty-four thousand one hundred and six	"	84106.
Eighty-six thousand and twenty-eight	"	86028.
Ninety-seven thousand three hundred and forty	"	97340.
Ninety-nine thousand five hundred and sixty-one	"	99561.
Ninety-five thousand six hundred and nineteen	"	95619.
Ninety-six thousand one hundred and ninety-five	"	96195.

Write eighty-one thousand two hundred and five, eighty-three thousand and fifty-one, eighty thousand five hundred and thirteen, eighty-five thousand one hundred and thirty, ninety-six thousand two hundred and forty-one, ninety-two

thousand four hundred and sixteen, ninety-four thousand one hundred and sixty-two, ninety-one thousand six hundred and twenty-four.

Read 80246, 82460, 84602, 86024, 97135, 91357, 93571.

1. At 6 shillings a bushel, how many bushels of apples can be bought for 60 shillings?

2. At 7 shillings a yard, how many yards of cloth can be bought for 63 shillings?

3. At 8 cents a yard, how many yards of ribbon can be bought for 64 cents?

4. If a father divide 70 marbles equally among his 7 sons, how many marbles will each receive?

5. If a gallon of milk cost 9 cents, what number of gallons will cost 72 cents?

6. A planter wishes to make 10 equal fields to contain 80 acres in all; how many acres will each field contain?

7. His neighbor wishes to divide 81 acres into fields of 9 acres each; how many fields will he have?

8. At 10 cents apiece, how many lead pencils can you buy for 90 cents?

PART III

WRITTEN ARITHMETIC.

NOTATION.

§ 61. Arithmetic is the science of numbers.

§ 62. A unit is any single thing.

§ 63. A number is a collection of units.

§ 64. Numbers are denoted by figures. For this purpose the following ten figures are used: 0 naught, 1 one, 2 two, 3 three, 4 four, 5 five, 6 six, 7 seven, 8 eight, 9 nine.

The figure 0 is used simply to fill vacant places, and is always omitted in reading.

§ 65. 10 units	make 1 ten,
10 tens	" 1 hundred,
10 hundreds	" 1 thousand,
10 thousands	" 1 ten-thousand,
10 ten-thousands	" 1 hundred-thousand,
10 hundred-thousands	" 1 million,
10 millions	" 1 ten-million,
10 ten-millions	" 1 hundred-million,
10 hundred-millions	" 1 billion, &c.

A unit	is called a unit of the first order,
A ten .	" a unit of the second order,
A hundred	" a unit of the third order,
A thousand	" a unit of the fourth order,
A ten-thousand	" a unit of the fifth order,
A hundred-thousand	" a unit of the sixth order, &c.

Thus, ten units of any order make one of the next higher.

§ 66. Any number less than ten is denoted by one figure, as in § 64.

§ 67. To denote a number between nine and one hundred, two figures are placed side by side, the one on the right denoting simple units, and the other denoting tens.

Thus, twenty-one; (that is, two tens and one unit), is denoted 21; thirty-two is denoted 32; forty-three 43; fifty-four 54; sixty-five 65; seventy-six 76; eighty-seven 87.

In 23, how many units, and how many tens? How many of each in 29? In 34? In 45? In 50? In 61? In 16? In 23? In 49? In 94? In 86? In 68? In 40? In 27?

Read 14, 25, 52, 36, 63, 10, 26, 62, 37, 73, 25, 53, 36, 64, 47, 75, 58, 86, 69, 97, 78, 86, 67, 56, 45.

Write seventeen, twenty-six, thirty-five, forty-six, fifty-five, sixty-four, seventy-three, eighty-two, ninety-eight, seventy-one, sixty-two, fifty-three, forty-four, thirty-four, twenty-five, thirty-six, eighteen, nineteen, ninety.

§ 68. To denote a number between ninety-nine and one thousand, three figures are placed side by side, the one on the right denoting units, the next denoting tens, and the other denoting hundreds.

Thus, five hundred and twenty-six, (that is, five hundreds, two tens, and six units), is denoted 526; one hundred and twenty-three is denoted 123; two hundred and thirty-one 231; three hundred and twelve 312.

In 127, how many units, how many tens, and how many hundreds? How many of each in 271? In 712? In 172? In 246? In 357? In 579? In 480? In 591? In 602? In 369? In 470? In 259? In 350? In 503? In 507?

Read 147, 258, 367, 478, 589, 690, 701, 812, 923, 134, 245, 358, 467, 578, 689, 790, 801, 912, 129, 230, 341, 452, 563, 674, 785, 896, 907, 108, 219, 320, 435.

Write 2 hundreds and 4 tens, 3 hundreds and 5 units, 4 hundreds 1 ten and 6 units, 5 hundreds 2 tens and 8 units, 6 hundreds 3 tens and 9 units, 7 hundreds and 4 tens, 8 hundreds and 5 units.

Write 4 units of the 1st order and 5 of the 3rd; 3 units of the 2nd order and 4 of the 3rd; 7 units of the 1st order, 5 of the 2nd, and 5 of the 3rd; 6 units of the 3rd order, 4 of the 2nd, and 8 of the 1st; 2 units of the 3rd order and 9 of the 2nd; 8 units of the 3rd order and 4 of the 1st.

Write one hundred and twenty-seven, two hundred and thirty-eight, three hundred and forty-nine, four hundred and sixty, five hundred and seventy-one, six hundred and eighty-two, seven hundred and ninety three, eight hundred and four, nine hundred and fifteen.

§ 69. To denote a number larger than 999, more than three figures are used; and these figures are separated into *periods* of three figures each, beginning at the right.

§ 70. The names of the periods in their order from right to left are as follows: 1st, units; 2nd, thousands; 3rd, millions; 4th, billions; 5th, trillions; 6th, quadrillions; 7th, quintillions; 8th, sextillions; 9th, septillions; 10th, octillions, &c.

§ 71. In each period, the figure on the right denotes units, the next tens, and the other hundreds, of that period.

Thus, 123 in the 2nd period denotes one hundred and

twenty-three thousand ; 245 in the 3rd period denotes two hundred and forty-five millions ; 102 in the 4th period denotes one hundred and two billions.

§72. The 1st, 2nd, and 3rd orders constitute the 1st period ; the 4th, 5th, and 6th orders constitute the 2nd period ; the 7th, 8th, and 9th orders constitute the 3rd period, &c.

§ 73. 1000 units	make 1 thousand,
1000 thousands	" 1 million,
1000 millions	" 1 billion,
1000 billions	" 1 trillion,
1000 trillions	" 1 quadrillion,
1000 quadrillions	" 1 quintillion, &c.

Thus, one thousand units of any period make one of the next higher.

§74. RULE FOR READING NUMBERS.—*Separate the figures into periods of three figures each, beginning at the right; then, beginning at the left, read each period as if it stood alone, and pronounce the name of the period after reading it.*

Read the following numbers :

3462	9077	5435	6428
4005	8611	1776	1864
26408	31597	72410	47400
98780	40862	57913	42701
109875	151903	168024	753812
210986	382014	409135	864923
1421097	4433125	5510246	7975034
7142109	5449312	6551024	4797503
19012417	21394455	54301556	43057974
20128529	32405467	65312605	54168085
20345630	976453240	653126075	541680854
12034563	197615325	165311565	5416808540

Write the following numbers in figures :

49. Six thousand, four hundred and eight.
50. Seventy thousand, and twenty-eight.
51. Eight hundred and fifty-one thousand, nine hundred and fifty-two.
52. Nine millions, eighty-one thousand, and ninety.
53. Sixty-three millions, twenty-seven thousand, five hundred and twenty-five.
54. Four hundred millions, and four.
55. Three millions, three thousand, and three.
56. Twenty millions, twenty thousand, and twenty.
57. One hundred millions, one hundred thousand, one hundred.
58. Two billions, three millions, four thousand, and five.
59. Sixty billions, seventy millions, eighty thousand, and ninety.
60. Six hundred billions, eighty millions, ten thousand, and nine.
61. Seventy-five billions, seventy-five thousand.
62. Ten billions, one hundred millions, and one.
63. Twenty-nine billions, and ninety-nine.
64. Six hundred and fifty billions, forty-three millions, twenty-one thousand, nine hundred and eighty-five.
65. Seventy-nine trillions, seven hundred and seven millions, eight hundred and eighty.

Write, and then read, the following :

66. 25 units of the 1st period, 75 of the 2nd, and 10 of the 3rd.
67. 17 units of the 2nd period and 23 of the 3rd.
68. 173 units of the 3rd period and 715 of the 1st.
69. 225 units of the 1st period and 25 of the 4th.
70. 23 units of the 1st period and 225 of the 3rd.

71. 321 units of the 3rd period, 32 of the 2nd, and 3 of the 1st.

72. 123 units of the 1st period, 45 of the 3rd, and 6 of the 5th.

73. 7 units of the 1st period, 8 of the 2nd, 90 of the 3rd, and 100 of the 4th.

74. 230 units of the 4th period, 45 of the 3rd, and 19 of the 1st.

75. 25 in the period of units, 3 in that of thousands, 47 of millions, and 127 of trillions.

76. 135 in the period of quadrillions, 790 of billions, and 59 of thousands.

77. 264 in the period of trillions, 80 of millions, and 68 of units.

78. 147 in the period of billions, 25 of millions, 89 of thousands, and 40 of units.

79. 400 in the period of millions, 40 of thousands, and 4 of units.

Note.—Let the teacher extend such exercises until the class seem to be perfectly familiar with the principles of Notation.

A D D I T I O N .

§ 75. Addition is the operation of finding one number equal to several other numbers put together.

§ 76. The *result* of addition is called the *sum* of the numbers added. Thus, 10 is the sum of 6 and 4, because 10 is equal to 6 and 4 put together.

Before proceeding further, let the pupil thoroughly memorize the following Table.

ADDITION TABLE.

2 and 0 are	2	3 and 0 are	3	4 and 0 are	4	5 and 0 are	5
2 and 1 are	3	3 and 1 are	4	4 and 1 are	5	5 and 1 are	6
2 and 2 are	4	3 and 2 are	5	4 and 2 are	6	5 and 2 are	7
2 and 3 are	5	3 and 3 are	6	4 and 3 are	7	5 and 3 are	8
2 and 4 are	6	3 and 4 are	7	4 and 4 are	8	5 and 4 are	9
2 and 5 are	7	3 and 5 are	8	4 and 5 are	9	5 and 5 are	10
2 and 6 are	8	3 and 6 are	9	4 and 6 are	10	5 and 6 are	11
2 and 7 are	9	3 and 7 are	10	4 and 7 are	11	5 and 7 are	12
2 and 8 are	10	3 and 8 are	11	4 and 8 are	12	5 and 8 are	13
2 and 9 are	11	3 and 9 are	12	4 and 9 are	13	5 and 9 are	14
6 and 0 are	6	7 and 0 are	7	8 and 0 are	8	9 and 0 are	9
6 and 1 are	7	7 and 1 are	8	8 and 1 are	9	9 and 1 are	10
6 and 2 are	8	7 and 2 are	9	8 and 2 are	10	9 and 2 are	11
6 and 3 are	9	7 and 3 are	10	8 and 3 are	11	9 and 3 are	12
6 and 4 are	10	7 and 4 are	11	8 and 4 are	12	9 and 4 are	13
6 and 5 are	11	7 and 5 are	12	8 and 5 are	13	9 and 5 are	14
6 and 6 are	12	7 and 6 are	13	8 and 6 are	14	9 and 6 are	15
6 and 7 are	13	7 and 7 are	14	8 and 7 are	15	9 and 7 are	16
6 and 8 are	14	7 and 8 are	15	8 and 8 are	16	9 and 8 are	17
6 and 9 are	15	7 and 9 are	16	8 and 9 are	17	9 and 9 are	18

§ 77 Two or more numbers can not be added or put together, unless they are similar. We can not say that 2 apples and 3 peaches make 5 apples or 5 peaches. So, 4 dollars and 5 cents make neither 9 dollars nor 9 cents. In the same way, 2 simple units and 6 tens make neither 8 units nor 8 tens.

Ex. 1. Add 2, 3, and 4.

2

3

4

9

§ 78. MODEL.—4 and 3 are 7, and 2 are 9.

The sum is 9.

EXPLANATION.—These three numbers can evidently be added together, because each of them is some number of

simple units, and hence they are all similar. Beginning at the foot of the column in which they are arranged, and going up it, as in the Model, we readily find that 9 is equal to the three numbers put together: and hence we conclude that their sum is 9.

Note.—Let the teacher see to it that the pupil recites precisely according to the model both here and wherever a model is given.

- | | |
|------------------------------------|---------|
| Ex. 2. Add 1, 3, and 5. | Sum, 9. |
| 3. What is the sum of 1, 2, and 3? | Ans. 6. |
| 4. What is the sum of 2, 3, and 2? | Ans. 7. |
| 5. Find the sum of 1, 3, and 4. | Sum, 8. |
| 6. Find the sum of 2, 4, and 2. | Sum, 8. |
| 7. Add 10, 20, and 40. | |

$$\begin{array}{r}
 10 \\
 20 \\
 40 \\
 \hline
 70
 \end{array}
 \quad \text{§79. MODEL.—}0; 4 and 2 are 6, and 1 are
 7. The sum is 70.$$

EXPLANATION.—Since each of these numbers is a number of tens, they can be added together. The 0 is written at the right, to keep the 7 in its proper place.

- | | |
|--|----------|
| Ex. 8. Add 10, 50, and 20. | Sum, 80. |
| 9. What is the sum of 30, 20, and 10? | Ans. 60. |
| 10. What is the sum of 30, 20, and 20? | Ans. 70. |
| 11. Find the sum of 40, 30, and 10. | Sum, 80. |
| 12. Find the sum of 40, 20, and 20. | Sum, 80. |
| 13. Add together 23 and 34. | |

$$\begin{array}{r}
 23 \\
 34 \\
 \hline
 57
 \end{array}
 \quad \text{§80. MODEL.—}4 and 3 are 7; 3 and 2 are
 5. The sum is 57.$$

EXPLANATION.—Each of these numbers consists partly of units and partly of tens. The units and the tens can not be added all together, as we learned in § 77; but the

units can be added together in one sum, and the tens in another, and these two sums may be placed side by side, each in its proper place. By this means the two given numbers are added together. The numbers are arranged for convenience with units under units, and tens under tens.

In like manner, numbers expressed by more than two figures may be added by taking the sum of the units, then the sum of the tens, and then the sum of the hundreds, &c., from right to left.

Ex. 14. Add together 123, 231, and 115. Sum, 469.

15. Add 1023, 2031, and 1105. Sum, 4159.

16. Find the sum of 113402 and 532125. Sum, 655527.

17. Find the sum of 10321, 34102, and 12321.

18. What is the sum of 2742, 1034, and 4211?

19. Add 123, 456, and 633.

$$\begin{array}{r}
 123 \\
 456 \\
 633 \\
 \hline
 1212
 \end{array}
 \quad \text{§ 81. MODEL.—} 3 \text{ and } 6 \text{ are } 9, \text{ and } 3 \text{ are } \\
 \quad 12; 1 \text{ and } 3 \text{ are } 4, \text{ and } 5 \text{ are } 9, \text{ and } 2 \text{ are } 11; \\
 \quad 1 \text{ and } 6 \text{ are } 7, \text{ and } 4 \text{ are } 11, \text{ and } 1 \text{ are } 12. \\
 \quad \text{The sum is } 1212.$$

EXPLANATION.—After arranging the numbers as in § 80, we find the sum of the column of units to be 12 units. Since this is expressed by two figures, it can not be placed under that column. We may, however, place 2 under the column of units, and 1 on its left, or under the column of tens. If we add the column of tens, we find 10 tens for its sum; and this can not be placed under the column of tens, for the same reason: but we may place the 0 under the tens, and the 1 on its left, or under the hundreds. In like manner, the 11 hundreds, which we get from the third column, may be written partly under hundreds and partly still further left. By adding these partial sums, we obtain 1212, the same as in the Model.

In practice it is unnecessary to write the several partial

sums in this way, if we are careful to add the left hand figure of each partial sum to the numbers in the next column on the left. In the Model, this figure is taken in first in adding, for fear of its being forgotten.

We may now give the following

RULE FOR ADDITION.—Arrange the numbers with units of the same order in the same column.

Beginning at the right, find the sum of each column; if this sum is expressed by one figure, set it down under the column; but, if it is expressed by more than one figure, set the right hand figure under this column, and add the remaining figure or figures in with the next column.

Set down the whole sum of the last column.

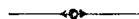
PROOF.—1. Add as before, but begin at the top of each column.

Or, 2. Find the sum of all the numbers but one, and to this sum add the number excepted.

Ex. 21. Add 246, 157, and 290.	Sum, 693.
22. Add 1234, 4507, and 1752.	Sum, 7493.
23. Add 2461, 5729, and 1207.	Sum, 9397
24. Add 1864, 8641, and 4681.	Sum, 15183.
25. Add 1864, 18645, and 18645.	Sum, 206965.
26. Add 1023, 10234, and 102349.	Sum, 113606.
27. Add 1020, 30405, and 607080.	Sum, 638505.
28. Add 1234, 5678, and 99807.	Sum, 97719.
29. Add 13057, 12304, and 10599.	Sum, 35870.
30. Add 27903, 72903, and 30927.	Sum, 131733.
31. What is the sum of 38014, 83014, and 41838?	
	Ans. 162866.
32. What is the sum of 49125, 52149, and 51949?	
	Ans. 153223.

-
33. What is the sum of 53236, 63254, and 62051?
Ans. 178541.
34. What is the sum of 63307, 74365, and 73162?
Ans. 210834.
- *35. What is the sum of 75418, 85476, and 84273?
Ans. 245167.
36. What is the sum of 86529, 96587, and 95384?
Ans. 278500.
37. What is the sum of 97630, 70698, and 60495?
Ans. 228823.
38. What is the sum of 80741, 81709, and 70506?
Ans. 232956.
39. What is the sum of 91852, 92810, and 81617?
Ans. 266279.
40. What is the sum of 302963, 92728, and 3921?
Ans. 399612.
41. Find the sum of 413074, 103829, and 31032.
Sum, 547935.
42. Find the sum of 513185, 2149310, 31145, and 42143.
Sum, 2735783.
43. Find the sum of 623295, 32510421, 43256, and 53254.
Sum, 33230226.
44. Find the sum of 7345106, 43621532, 54367, and 64375
Sum, 51085380.
45. Find the sum of 8457216, 54732643, 65478, and 75386.
Sum, 63330723.
46. Find the sum of 9568327, 65843754, 75689, and 86497.
Sum, 75574267.
47. Find the sum of 10679438, 76954865, 867910, and 975108.
Sum, 89477321.
48. Find the sum of 217810549, 871065976, 9781021,
and 1086219.
Sum, 1099743765.
49. Add 3189216510, 982176087, 10892132, and
21973210.
Sum, 13043842939.

50. Add 4291032, 76211093, 2872198, 20910324, 332108,
and 431194321. Sum, 535811076.
51. Add 5926873, 3927591, 4389217, 6431279, 3326981,
and 5678901. Sum, 29680842.
52. Add 20065321, 67754326, 83332716, 2176534498,
and 3222110097 Sum, 5569796958.
53. Add 327, 916, 424, 326, 917, 120, 232, 316, 419,
550, 613, 222, and 311. Sum, 5693.
54. Add 2160, 6120, 1260, 1620, 2610, 1234, 4321,
1200, 1020, 3156, and 2160. Sum, 26851.
55. Add 2175, 1750, 2318, 9129, 6312, 2120, 3816,
4505, 3216, 7888, and 3200. Sum, 46429,
56. Add 36, 22, 20, 19, 43, 16, and 10. Sum, 166.
57. Add 50, 60, 70, 81, 18, 91, and 19. Sum, 389.



S U B T R A C T I O N

§ 82. Subtraction is the operation of finding the difference between two numbers, by taking the less from the greater.

§ 83. The number to be subtracted is called the *subtrahend*.

§ 84. The number to be diminished is called the *minuend*.

§ 85. The result of subtraction is called the *remainder* or the *difference*.

Before proceeding further, let the pupil thoroughly memorize the following Table.

SUBTRACTION TABLE.

1 from 1 leaves 0	2 from 2 leaves 0	3 from 3 leaves 0
1 from 2 leaves 1	2 from 3 leaves 1	3 from 4 leaves 1
1 from 3 leaves 2	2 from 4 leaves 2	3 from 5 leaves 2
1 from 4 leaves 3	2 from 5 leaves 3	3 from 6 leaves 3
1 from 5 leaves 4	2 from 6 leaves 4	3 from 7 leaves 4
1 from 6 leaves 5	2 from 7 leaves 5	3 from 8 leaves 5
1 from 7 leaves 6	2 from 8 leaves 6	3 from 9 leaves 6
1 from 8 leaves 7	2 from 9 leaves 7	3 from 10 leaves 7
1 from 9 leaves 8	2 from 10 leaves 8	3 from 11 leaves 8
1 from 10 leaves 9	2 from 11 leaves 9	3 from 12 leaves 9
4 from 4 leaves 0	5 from 5 leaves 0	6 from 6 leaves 0
4 from 5 leaves 1	5 from 6 leaves 1	6 from 7 leaves 1
4 from 6 leaves 2	5 from 7 leaves 2	6 from 8 leaves 2
4 from 7 leaves 3	5 from 8 leaves 3	6 from 9 leaves 3
4 from 8 leaves 4	5 from 9 leaves 4	6 from 10 leaves 4
4 from 9 leaves 5	5 from 10 leaves 5	6 from 11 leaves 5
4 from 10 leaves 6	5 from 11 leaves 6	6 from 12 leaves 6
4 from 11 leaves 7	5 from 12 leaves 7	6 from 13 leaves 7
4 from 12 leaves 8	5 from 13 leaves 8	6 from 14 leaves 8
4 from 13 leaves 9	5 from 14 leaves 9	6 from 15 leaves 9
7 from 7 leaves 0	8 from 8 leaves 0	9 from 9 leaves 0
7 from 8 leaves 1	8 from 9 leaves 1	9 from 10 leaves 1
7 from 9 leaves 2	8 from 10 leaves 2	9 from 11 leaves 2
7 from 10 leaves 3	8 from 11 leaves 3	9 from 12 leaves 3
7 from 11 leaves 4	8 from 12 leaves 4	9 from 13 leaves 4
7 from 12 leaves 5	8 from 13 leaves 5	9 from 14 leaves 5
7 from 13 leaves 6	8 from 14 leaves 6	9 from 15 leaves 6
7 from 14 leaves 7	8 from 15 leaves 7	9 from 16 leaves 7
7 from 15 leaves 8	8 from 16 leaves 8	9 from 17 leaves 8
7 from 16 leaves 9	8 from 17 leaves 9	9 from 18 leaves 9

§ 86. The difference between two numbers can not be found, unless they are similar. We can not say that 2 apples from 5 peaches leaves 3 apples or 3 peaches. So, 5 cents from 7 dollars leaves neither 2 cents nor 2 dollars.

In the same way, 3 simple units from 7 tens leaves neither 4 units nor 4 tens.

§ 87. The difference between two numbers is not changed by increasing those numbers equally. Thus,

The difference between 8 and 3 is 5: now, add 4 to each of these numbers, and the difference between 12 and 7 is 5 still: again, add 6 to each of these last, and the difference between 18 and 13 is 5 still: and so on.

Ex. 1. Subtract 25 from 48.

48

25

23

§ 88. MODEL.—5 from 8 leaves 3: 2 from 4

leaves 2. The remainder is 23..

EXPLANATION.—We arrange the two numbers with units under units, and tens under tens, placing the subtrahend under the minuend. We then take the units of the subtrahend from those of the minuend, leaving 3 units for the remainder; and we then take the tens of the subtrahend from those of the minuend, leaving 2 tens for the remainder.

In the same way we would proceed if the numbers were composed of more than two figures each, taking the difference; first of the units, next of the tens, then of the hundreds, &c., from right to left.

Ex. 2. Subtract 123 from 369.

Rem. 246.

3. Subtract 1024 from 2158.

Rem. 1134.

4. Subtract 1203 from 7894.

Rem. 6691.

5. Subtract 2345 from 5689.

Rem. 3344.

6. From 98575 take 34543.

Rem. 64032.

7. From 575898 take 364032.

Rem. 211866.

8. From 568759 take 203203.

Rem. 365556.

9. From 679868 take 102302.

Rem. 577566.

10. From 789977 take 123456.

Rem. 666531.

11. From 2561 take 836.

2561 § 89. MODEL.—6 from 11 leaves 5; 4
 836 from 6 leaves 2; 8 from 15 leaves 7; 1 from
 $\underline{1725}$ 2 leaves 1. The remainder is 1725.

EXPLANATION.—After arranging the numbers as in § 88, we are required to take 6 units from 1 unit: this, of course, we can not do. But (§ 87) the difference between two numbers is not changed by increasing those numbers equally. So we add 10 units to the 1 unit of the minuend, making 11 units, from which we subtract the 6 units of the subtrahend, getting 5 units for the remainder. Then, since we increased the minuend 10 units, we must increase the subtrahend the same amount: and do this by adding 1 ten (equal to 10 units) to the 3 tens of the subtrahend. Hence we say, “4 from 6 leaves 2.” In the column of hundreds we meet the same difficulty, and avoid it by adding 10 hundreds to the minuend, and afterwards 1 thousand (equal to 10 hundreds) to the subtrahend.

Ex. 12. From 123456 take 9876.

123456	§ 90. MODEL.—6 from 6 leaves 0; 7
9876	from 15 leaves 8; 9 from 14 leaves 5; 10
$\underline{113580}$	from 13 leaves 3; 1 from 2 leaves 1; 0
	from 1 leaves 1. The remainder is 113580.

We may now give the following

RULE FOR SUBTRACTION.—*Place the subtrahend under the minuend, with units of the same order in the same column.*

Beginning at the right, take each figure of the subtrahend from the corresponding figure of the minuend.

If any figure of the minuend is less than the corresponding figure of the subtrahend, add 10 to this minuend figure, and add 1 to the subtrahend figure in the next column.

PROOF.—1. Add the remainder to the subtrahend; the sum will be equal to the minuend.

Or, 2. Subtract the remainder from the minuend ; the difference will be equal to the subtrahend.

- | | |
|--|----------------|
| Ex. 13. From 270 take 195. | Rem. 75. |
| 14. From 381 take 186. | Rem. 195. |
| 15. From 492 take 275. | Rem. 217. |
| 16. From 5104 take 386. | Rem. 4718. |
| 17. From 6215 take 497. | Rem. 5718. |
| 18. From 7326 take 5108. | Rem. 2218. |
| 19. From 8435 take 6229. | Rem. 2206. |
| 20. From 9326 take 6340. | Rem. 2986. |
| 21. The minuend is 10437 ; the subtrahend is 7465 ;
what is the remainder ? | Rem. 2972. |
| 22. The minuend is 21548 ; the subtrahend is 8687 ;
what is the remainder ? | Rem. 12861. |
| 23. The minuend is 30435 ; the subtrahend is 9798 ;
what is the remainder ? | Rem. 20637. |
| 24. The minuend is 49324 ; the subtrahend is 10899 ;
what is the remainder ? | Rem. 38425. |
| 25. The minuend is 58213 ; the subtrahend is 21911 ;
what is the remainder ? | Rem. 36302. |
| 26. The minuend is 67102 ; the subtrahend is 32823 ;
what is the remainder ? | Rem. 34279. |
| 27. The minuend is 78901 ; the subtrahend is 41723 ;
what is the remainder ? | Rem. 37178. |
| 28. The minuend is 891012 ; the subtrahend is 50612 ;
what is the remainder ? | Rem. 840400. |
| 29. The minuend is 9102123 ; the subtrahend is 61501 ;
what is the remainder ? | Rem. 9040622. |
| 30. The minuend is 10213435 ; the subtrahend is 76522 ;
what is the remainder ? | Rem. 10136913. |
| 31. The subt'd is 10218435 ; the minuend is 53431201 ;
what is the remainder ? | Rem. 43217766. |

32. The subt'd is 21345647 ; the minuend is 534312010 ;
what is the remainder ? Rem. 512966363.
33. The subtrahend is 21345 ; the minuend is 312010 ;
what is the remainder ? Rem. 290665.
34. The subtrahend is 121345 ; the minuend is 312010 ;
what is the remainder ? Rem. 190665.
35. The subt'd is 6121345 ; the minuend is 31201016 ;
what is the remainder ? Rem. 25079671.
36. The subt'd is 5431216 ; the minuend is 31201016 ;
what is the remainder ? Rem. 25769800.
37. The subt'd is 6320105 ; the minuend is 42815427 ;
what is the remainder ? Rem. 35995322.
38. The subt'd is 7219094 ; the minuend is 53426739 ;
what is the remainder ? Rem. 46207645.
39. The subt'd is 8321125 ; the minuend is 42815628 ;
what is the remainder ? Rem. 33994503.
40. The subt'd is 9432167 ; the minuend is 31204517 ;
what is the remainder ? Rem. 21772350.
41. What is the difference between 24680 and 86042 ?
Ans. 61362.
42. What is the difference between 25 and 25000 ?
Ans. 24975.
43. What is the difference between 9000000 and 9 ?
Ans. 8999991.
44. What is the difference between 95000 and 950 ?
Ans. 94050
45. What is the difference between 13579 and 9753 ?
Ans. 83952.
46. What is the difference between 24680 and 8642 ?
Ans. 16038.
47. What is the difference between 35791 and 9753 ?
Ans. 26038.
48. What is the difference between 1000000 and 1 ?
Ans. 999999.

-
49. What is the difference between 200000 and 200 ?
Ans. 199800.
50. What is the difference between 45000 and 45 ?
Ans. 44955.
-

PROMISCUOUS PROBLEMS.

1. A farmer raised on one field 425 bushels of corn, on another 379 bushels, and on a third 19⁴ bushels; how many bushels did he raise on all three ? Ans. 1002 bushels.
2. A man lent 2550 dollars to one friend, 3775 dollars to another, and kept 1575 dollars for his own use; how much money had he at first ? Ans. 7900 dollars.
3. A merchant bought a case of silk for 3740 dollars, and sold it for 3387 dollars; how much did he lose on it ? Ans. 353 dollars.
4. The same man bought a quantity of linen for 2465 dollars, and sold it at a profit of 1233 dollars; how much did he receive for it ? Ans. 3698 dollars.
5. I bought 525 barrels of flour, and sold it all but 238 barrels; how much did I sell ? Ans. 287 barrels.
6. I wish to buy a tract of land for 5000 dollars, and I have only 3775 dollars on hand; how much money do I lack ? Ans. 1225 dollars.
7. By selling a farm for 3000 dollars, I gain 875 dollars; what did I give for it ? Ans. 2125 dollars.
8. I bought 3 bales of Stowe's domestic, containing respectively 985 yards, 1063 yards, and 1187 yards; how many yards did I buy in all ? Ans. 3235 yards.
9. I bought one lot of coffee for 786 dollars, and another for 695 dollars, and sold one lot for 875 dollars, and the

other for 200 dollars less; how much did I gain or lose in all?

Ans. I gained 69 dollars.

10. A merchant went to market with 10000 dollars, and laid out 2569 dollars for dry goods, 2147 dollars for groceries, 1728 dollars for hardware, and 975 dollars for queensware; how much money did he bring home, provided his trip cost him 81 dollars?

Ans. 2500 dollars.

11. A merchant made a collecting tour: in one town he collected 1075 dollars; in an other, 2128 dollars; in a third, 1357 dollars; and in a fourth, 869 dollars; he had 50 dollars with him when he started, and his expenses for the whole tour were 105 dollars; how much money did he bring home?

Ans. 5374 dollars.

12. A dealer bought 25 bolts of cloth containing altogether 700 yards; after selling 18 bolts containing 578 yards, how many yards had he left?

Ans. 122 yards.

13. Four men contribute to the founding of a school: A gives 1000 dollars; B, 245 dollars more than A; C, 176 dollars less than B; and D, 233 dollars more than C; how much does D contribute?

Ans. 1302 dollars.

14. A farmer raised 253 bushels of wheat, which is 149 bushels less than he raised last year; how much did he raise last year?

Ans. 402 bushels.

15. I borrowed 1000 dollars from a friend; since then I have paid him at different times 225 dollars, 239 dollars, and 397 dollars; how much do I still owe him?

Ans. 139 dollars.

16. A man who had 2465 acres of land, gave one of his sons 729 acres, and an other 573 acres; how many acres had he left?

Ans. 1163 acres.

17. A farmer raised 876 bushels of wheat, and sold 147 bushels, and had 208 bushels ground into flour; how many bushels had he remaining?

Ans. 521 bushels.

18. If the minuend is 300300, and the remainder is 48729, what is the subtrahend? Ans. 251571.
19. If the subtrahend is 300300, and the remainder is 48729, what is the minuend? Ans. 349029.
20. If the subtrahend is 92784, and the minuend is 500300, what is the remainder? Ans. 207516.
21. If the subtrahend is 568913, and the minuend is 891356, what is the remainder? Ans. 322443.
22. If the subtrahend is 123456789, and the minuend is 987654321, what is the remainder? Ans. 864197532.

MULTIPLICATION

§ 91. Multiplication is the operation of finding a number which shall contain *one* of two given numbers as many times as there are units in *the other*.

§ 92. The number to be multiplied is called the *multiplicand*.

§ 93. The multiplying number is called the *multiplier*.

§ 94. The result of multiplication is called the *product*.

§ 95. Either the multiplicand or the multiplier is called a *factor* of the product, and they both are called its *factors*.

§ 96. An *abstract* number is one whose unit is not specified; as, two, forty, seven, twenty-seven.

§ 97. A *concrete* number is one whose unit is specified; as, five dollars, ten men, sixteen books.

§ 98. The product of any two abstract factors is the same, no matter which is used as multiplier. Thus, 3 times 6, and 6 times 3, are each equal to 18; 4 times 5 is equal to 5 times 4.

Before proceeding further, let the pupil thoroughly memorize the following Table.

MULTIPLICATION TABLE.

Once	0 is 0	Twice	0 are 0	3 times	0 are 0
Once	1 is 1	Twice	1 are 2	3 times	1 are 3
Once	2 is 2	Twice	2 are 4	3 times	2 are 6
Once	3 is 3	Twice	3 are 6	3 times	3 are 9
Once	4 is 4	Twice	4 are 8	3 times	4 are 12
Once	5 is 5	Twice	5 are 10	3 times	5 are 15
Once	6 is 6	Twice	6 are 12	3 times	6 are 18
Once	7 is 7	Twice	7 are 14	3 times	7 are 21
Once	8 is 8	Twice	8 are 16	3 times	8 are 24
Once	9 is 9	Twice	9 are 18	3 times	9 are 27
Once	10 is 10	Twice	10 are 20	3 times	10 are 30
Once	11 is 11	Twice	11 are 22	3 times	11 are 33
Once	12 is 12	Twice	12 are 24	3 times	12 are 36

4 times	0 are 0	5 times	0 are 0	6 times	0 are 0
4 times	1 are 4	5 times	1 are 5	6 times	1 are 6
4 times	2 are 8	5 times	2 are 10	6 times	2 are 12
4 times	3 are 12	5 times	3 are 15	6 times	3 are 18
4 times	4 are 16	5 times	4 are 20	6 times	4 are 24
4 times	5 are 20	5 times	5 are 25	6 times	5 are 30
4 times	6 are 24	5 times	6 are 30	6 times	6 are 36
4 times	7 are 28	5 times	7 are 35	6 times	7 are 42
4 times	8 are 32	5 times	8 are 40	6 times	8 are 48
4 times	9 are 36	5 times	9 are 45	6 times	9 are 54
4 times	10 are 40	5 times	10 are 50	6 times	10 are 60
4 times	11 are 44	5 times	11 are 55	6 times	11 are 66
4 times	12 are 48	5 times	12 are 60	6 times	12 are 72

7 times	0 are 0	8 times	0 are 0	9 times	0 are 0
7 times	1 are 7	8 times	1 are 8	9 times	1 are 9
7 times	2 are 14	8 times	2 are 16	9 times	2 are 18
7 times	3 are 21	8 times	3 are 24	9 times	3 are 27
7 times	4 are 28	8 times	4 are 32	9 times	4 are 36
7 times	5 are 35	8 times	5 are 40	9 times	5 are 45
7 times	6 are 42	8 times	6 are 48	9 times	6 are 54
7 times	7 are 49	8 times	7 are 56	9 times	7 are 63
7 times	8 are 56	8 times	8 are 64	9 times	8 are 72
7 times	9 are 63	8 times	9 are 72	9 times	9 are 81
7 times	10 are 70	8 times	10 are 80	9 times	10 are 90
7 times	11 are 77	8 times	11 are 88	9 times	11 are 99
7 times	12 are 84	8 times	12 are 96	9 times	12 are 108

10 times	0 are	0	11 times	0 are	0	12 times	0 are	0
10 times	1 are	10	11 times	1 are	11	12 times	1 are	12
10 times	2 are	20	11 times	2 are	22	12 times	2 are	24
10 times	3 are	30	11 times	3 are	33	12 times	3 are	36
10 times	4 are	40	11 times	4 are	44	12 times	4 are	48
10 times	5 are	50	11 times	5 are	55	12 times	5 are	60
10 times	6 are	60	11 times	6 are	66	12 times	6 are	72
10 times	7 are	70	11 times	7 are	77	12 times	7 are	84
10 times	8 are	80	11 times	8 are	88	12 times	8 are	96
10 times	9 are	90	11 times	9 are	99	12 times	9 are	108
10 times	10 are	100	11 times	10 are	110	12 times	10 are	120
10 times	11 are	110	11 times	11 are	121	12 times	11 are	132
10 times	12 are	120	11 times	12 are	132	12 times	12 are	144

§ 99. The multiplier must always be an abstract number, and the product is always like the multiplicand. Thus, to find the cost of 5 yards of cloth at 10 cents a yard, it is evident that we can not multiply 10 cents by 5 yards; that is, we can not say, 5 yards times 10 cents: but we multiply 10 cents by 5, and this evidently gives 50 cents.

Ex. 1. Multiply 2423 by 2.

2423. § 100. MODEL.—Twice 3 are 6; twice 2
 $\frac{2}{4}$ are 4; twice 4 are 8; twice 2 are 4. The
 4846 product is 4846.

EXPLANATION.—The smaller factor is placed under the larger. Then, beginning at the right, each figure of the upper number is taken twice, and each product is set under the figure which produced it. For, since the product is always like the multiplicand, (§ 99,) twice 3 units are 6 units, twice 2 tens are 4 tens, &c.

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|----------------------------|-----------------|
| Ex. 2. Multiply 1203 by 2. | Prod. 2406. |
| 3. Multiply 130420 by 2. | Prod. 260840. |
| 4. Multiply 20301402 by 2. | Prod. 40602804. |
| 5. Multiply 2030102 by 3. | Prod. 6090306. |
| 6. Multiply 1203201 by 3. | Prod. 3609603. |

- | | |
|---------------------------|----------------|
| 7. Multiply 2310132 by 3. | Prod. 6930396. |
| 8. Multiply 21012 by 4. | Prod. 84048. |
| 9. Multiply 102120 by 4. | Prod. 408480. |
| 10. Multiply 101101 by 5. | Prod. 505505. |
| 11. Multiply 12345 by 4. | |

$$\begin{array}{r} 12345 \\ \times \quad 4 \\ \hline 49380 \end{array}$$
§ 101. MODEL.—4 times 5 are 20; 4 times
4 are 16, and 2 are 18; 4 times 3 are 12,
and 1 are 13; 4 times 2 are 8, and 1 are 9;
4 times 1 are 4. The product is 49380.

EXPLANATION.—When we multiply 5 units by 4, we get 20 units; and, since this is expressed by two figures, it can not be written in the place of units: hence, as in addition, § 81, we set down the 0 in the place of units, and reserve the 2 to be added to the 16 tens, which we get by multiplying 4 tens by 4. Again, since 18 tens are equal to 1 hundred and 8 tens, we set 8 in the place of tens, and reserve the 1 hundred to be added to the product of 3 hundreds by 4.

- | | |
|------------------------------|-----------------|
| Ex. 12. Multiply 52706 by 3. | Prod. 158118. |
| 13. Multiply 2795 by 2. | Prod. 5590. |
| 14. Multiply 1684 by 3. | Prod. 5052. |
| 15. Multiply 38106 by 5. | Prod. 190530. |
| 16. Multiply 49217 by 6. | Prod. 295302. |
| 17. Multiply 510323 by 7. | Prod. 3572296. |
| 18. Multiply 621439 by 8. | Prod. 4970712. |
| 19. Multiply 7325410 by 9. | Prod. 65928690. |
| 20. Multiply 8436521 by 10. | |

$$\begin{array}{r} 84365210 \\ \times \quad 10 \\ \hline 84365210 \end{array}$$
§ 102. MODEL.—Annex one naught to the
multiplicand. The product is 84365210.

EXPLANATION.—Since 10 units of any order make one of the next order on the left, any number is multiplied by 10 by merely moving each of its figures one place to the left, and putting a 0 in the place of units. So, if the multiplier

is composed of 1 with naughts annexed, the product is obtained by simply annexing to the multiplicand as many naughts as there are at the right of the 1 in the multiplier.

- Ex. 21. Multiply 31597 by 10. Prod. 315970.
 22. Multiply 426108 by 100. Prod. 42610800.
 23. Multiply 537219 by 10. Prod. 5372190.
 24. Multiply 6483210 by 100. Prod. 648321000.
 25. Multiply 7594321 by 1000. Prod. 7594321000.
 26. Multiply 12345 by 50.

§ 103. MODEL.—5 times 5 are 25; 5 times 4 are 20, and 2 are 22; 5 times 3 are 15, and 2 are 17; 5 times 2 are 10, and 1 are 11; 5 times 1 are 5, and 1 are 6:—annex 0. The product is 617250.

EXPLANATION.—We first multiply by 5, as in § 101; and then, since 50 is 10 times 5, we multiply this product by 10, as in § 102, to get the true product.

- Ex. 27. Multiply 6172 by 20. Prod. 123440.
 28. Multiply 7283 by 30. Prod. 218490.
 29. Multiply 8394 by 40. Prod. 335760.
 30. Multiply 94105 by 500. Prod. 47052500.
 31. Multiply 105216 by 60. Prod. 6312960.
 32. Multiply 216327 by 700. Prod. 151428900.
 33. Multiply 317438 by 80. Prod. 25395040.
 34. Multiply 428549 by 900. Prod. 385694100.
 35. Multiply 246 by 35.

§ 104. MODEL.—5 times 6 are 30; 5 times 4 are 20, and 3 are 23; 5 times 2 are 10, and 2 are 12:—3 times 6 are 18, set down 8 under 3; 3 times $\frac{1}{2}$ are 12, and 1 are 13; 3 times 2 are 6, and 1 are 7:—add the partial products: 0; 8, and 3 are 11; 1 and 3 are 4, and 2 are 6; 7 and 1 are 8. The product is 8610.

EXPLANATION.—The upper number is multiplied, first by 5, as in § 101, and then by 30, as in § 103, except that the 0 at the right is omitted, as being unnecessary, since the several figures can be placed in their proper columns without it. It must be remembered, however, that the second partial product is not 738, but 7380.

We may now give the following

RULE FOR MULTIPLICATION.—1. When either factor contains but one valuable figure. Set the smaller factor under the larger. Beginning at the right, multiply each figure of the upper number by the lower number, set down the right hand figure of the product, and add the remaining figure, if any, to the next product; but set down the whole of the last product.

2. When the smaller factor contains more than one valuable figure. Set it under the larger; multiply the upper factor by each figure of the lower, setting the first figure of each partial product under the multiplying figure which produced it, and add the partial products together in that order.

PROOF.—Multiply the lower factor by the upper.

Ex. 36. Multiply 357 by 46.	Prod. 16422.
37. Multiply 468 by 57.	Prod. 26676.
38. Multiply 579 by 68.	Prod. 39372.
39. Multiply 6810 by 79.	Prod. 537990.
40. Multiply 7921 by 810.	Prod. 6416010.
41. Multiply 8132 by 92.	Prod. 743144.
42. Multiply 9243 by 103.	Prod. 952029.
43. Multiply 10354 by 214.	Prod. 2215756.
44. Multiply 21456 by 325.	Prod. 6973200.
45. Multiply 32567 by 436.	Prod. 14159212.
46. Multiply 43678 by 547.	Prod. 23891866.
47. Multiply 54789 by 658.	Prod. 36551162.

48. Multiply 658109 by 769.	Prod. 506085821.
49. Multiply 7692110 by 8710.	Prod. 67075199200.
50. Multiply 87103251 by 9821.	Prod. 855441028071
51. Multiply 98214 by 10933.	Prod. 1073675448.
52. Multiply 109325 by 21104.	Prod. 2367194800.
53. Multiply 2110436 by 31254.	Prod. 65959566744.
54. Multiply 321547 by 42365.	Prod. 13623538655.
55. Multiply 342658 by 53476.	Prod. 18323979208.
56. Multiply 453769 by 6487.	Prod. 2943599502.
57. Multiply 564760 by 7598.	Prod. 4291046480.
58. Multiply 675671 by 86109.	Prod. 58181354169.
59. Multiply 786952 by 97210.	Prod. 76499602920.
60. Multiply 897063 by 10832.	Prod. 9716986416.
61. Multiply 908174 by 20943.	Prod. 19010891682.
62. Multiply 108295 by 31054.	Prod. 3362992930.
63. Multiply 2092105 by 42165.	Prod. 85213607320.
64. Multiply 31103216 by 5327.	Prod. 165696831632.
65. Multiply 42214327 by 6438.	Prod. 271775837226.
66. Multiply 1203450 by 9904.	Prod. 10835863800.
67. Multiply 9087061 by 56768.	Prod. 515309055188.
68. Multiply 8706544 by 67089.	Prod. 584113330416.
69. Multiply 4321209 by 123401.	Prod. 533276081481.
70. Multiply 3456789 by 567690.	Prod. 1960310474010
71. Multiply 598750 by 32451.	Prod. 19430086250.
72. Multiply 5007631 by 43976.	Prod. 220215389856.
73. Multiply 423455 by 3258.	Prod. 1377499115.
74. Multiply 536527 by 1864.	Prod. 1000086328.
75. Multiply 25876 by 2864.	Prod. 74108864.
76. Multiply 47237 by 3526.	Prod. 166557662.
77. Multiply 95423 by 8721.	Prod. 832183983.
78. Multiply 58792 by 4587.	Prod. 269678904.
79. Multiply 67813 by 12525.	Prod. 849357825.
80. Multiply 249685 by 4372.	Prod. 1055390420.

81. Multiply 395548 by 10286.	Prod. 4068606728.
82. Multiply 665528 by 8765.	Prod. 5833852920.
83. Multiply 278963 by 7782.	Prod. 2170890063.
84. Multiply 142936 by 9.17	Prod. 1317441112.
85. Multiply 111375 by 2242.	Prod. 249702750.
86. Multiply 999763 by 8765.	Prod. 8762922695.
87. Multiply 876543 by 5462.	Prod. 4787677860.
88. Multiply 275684 by 4827.	Prod. 1331726608.

DIVISION

§ 105. Division is the operation of finding how many times one number is contained in an other. Or,

§ 106. Division is the operation of separating a number into some number of equal parts.

Thus, if I spend 15 cents for lace at 5 cents a yard, the work consists in finding how many times 5 cents is contained in 15 cents, and this number of times is equal to the number of yards I get.

But, if I pay 15 cents for 3 yards of lace, the work consists in separating 15 cents into 3 equal parts, and each one of these parts is the price of a yard.

§ 107. The number *to be divided* is called the *dividend*.

§ 108. The *dividing number* is called the *divisor*.

§ 109. The *result* of division is called the *quotient*.

§ 110. When the division is not complete, the undivided part of the *dividend* is called the *remainder*.

Thus, 9 in 29, 3 times, with 2 over : here 29 is the *dividend*, 9 is the *divisor*, 3 is the *quotient*, and 2 is the *remainder*.

Before proceeding further, let the pupil thoroughly memorize the following Table.

DIVISION TABLE.

1 in 0, no time	2 in 0, no time	3 in 0, no time
1 in 1, once	2 in 2, once	3 in 3, once
1 in 2, twice	2 in 4, twice	3 in 6, twice
1 in 3, 3 times	2 in 6, 3 times	3 in 9, 3 times
1 in 4, 4 times	2 in 8, 4 times	3 in 12, 4 times
1 in 5, 5 times	2 in 10, 5 times	3 in 15, 5 times
1 in 6, 6 times	2 in 12, 6 times	3 in 18, 6 times
1 in 7, 7 times	2 in 14, 7 times	3 in 21, 7 times
1 in 8, 8 times	2 in 16, 8 times	3 in 24, 8 times
1 in 9, 9 times	2 in 18, 9 times	3 in 27, 9 times
4 in 0, no time	5 in 0, no time	6 in 0, no time
4 in 4, once	5 in 5, once	6 in 6, once
4 in 8, twice	5 in 10, twice	6 in 12, twice
4 in 12, 3 times	5 in 15, 3 times	6 in 18, 3 times
4 in 16, 4 times	5 in 20, 4 times	6 in 24, 4 times
4 in 20, 5 times	5 in 25, 5 times	6 in 30, 5 times
4 in 24, 6 times	5 in 30, 6 times	6 in 36, 6 times
4 in 28, 7 times	5 in 35, 7 times	6 in 42, 7 times
4 in 32, 8 times	5 in 40, 8 times	6 in 48, 8 times
4 in 36, 9 times	5 in 45, 9 times	6 in 54, 9 times
7 in 0, no time	8 in 0, no time	9 in 0, no time
7 in 7, once	8 in 8, once	9 in 9, once
7 in 14, twice	8 in 16, twice	9 in 18, twice
7 in 21, 3 times	8 in 24, 3 times	9 in 27, 3 times
7 in 28, 4 times	8 in 32, 4 times	9 in 36, 4 times
7 in 35, 5 times	8 in 40, 5 times	9 in 45, 5 times
7 in 42, 6 times	8 in 48, 6 times	9 in 54, 6 times
7 in 49, 7 times	8 in 56, 7 times	9 in 63, 7 times
7 in 56, 8 times	8 in 64, 8 times	9 in 72, 8 times
7 in 63, 9 times	8 in 72, 9 times	9 in 81, 9 times
10 in 0, no time	11 in 0, no time	12 in 0, no time
10 in 10, once	11 in 11, once	12 in 12, once
10 in 20, twice	11 in 22, twice	12 in 24, twice
10 in 30, 3 times	11 in 33, 3 times	12 in 36, 3 times
10 in 40, 4 times	11 in 44, 4 times	12 in 48, 4 times
10 in 50, 5 times	11 in 55, 5 times	12 in 60, 5 times
10 in 60, 6 times	11 in 66, 6 times	12 in 72, 6 times
10 in 70, 7 times	11 in 77, 7 times	12 in 84, 7 times
10 in 80, 8 times	11 in 88, 8 times	12 in 96, 8 times
10 in 90, 9 times	11 in 99, 9 times	12 in 108, 9 times

SHORT DIVISION.

Ex. 1. Divide 24608 by 2.

$$\begin{array}{r} 2)24608 \\ \underline{12304} \end{array} \quad \text{§ 111. MODEL.—2 in 2, once; 2 in 4, twice; 2 in 6, 3 times; 2 in 0, no time; 2 in 8, 4 times. The quotient is 12304.}$$

EXPLANATION.—The divisor, 2, is placed on the left of the dividend. Then, beginning for convenience at the left, the number in each order of units is divided by 2, and each quotient figure is set under the one from which it was obtained.

Ex. 2. Divide 36090 by 3.	Quot. 12030.
3. Divide 26800 by 2.	Quot. 13400.
4. Divide 906 by 3.	Quot. 302.
5. Divide 8404 by 4.	Quot. 2101.
6. Divide 4808 by 4.	Quot. 1202.
7. Divide 5055 by 5.	Quot. 1011.
8. Divide 660 by 6.	Quot. 110.
9. Divide 77 by 7.	Quot. 11.
10. Divide 808 by 8.	Quot. 101.
11. Divide 8565 by 5.	

$$\begin{array}{r} 5)8565 \\ \underline{1713} \end{array} \quad \text{§ 112. MODEL.—5 in 8, once, with 3 over; 5 in 35, 7 times; 5 in 6, once, with 1 over; 5 in 15, 3 times. The quotient is 1713.}$$

EXPLANATION.—5 is contained once in 5; so that there are 3 thousands still undivided. Now, 3 thousands are equal to 30 hundreds, and this added to the 5 hundreds of the dividend gives 35 hundreds, in which the divisor, 5, is contained exactly 7 (hundred) times. Again, after getting the 1 ten of the quotient, we have 1 ten of the dividend undivided. This is equal to 10 units, which added to the 5 units of the dividend, makes 15 units, in which the divisor is contained exactly 3 times.

Ex. 12. Divide 573 by 6.

§ 113. MODEL.—6 in 57, 9 times, with

$$\begin{array}{r} 6)573 \\ \underline{-5\ldots3} \end{array}$$
 3 over; 6 in 33, 5 times, with 3 over, set
 down 5 in the quotient, and 3 as remain-
 der. The quotient is 95, and the remain-
 der 3.

We may now give the following

RULE FOR SHORT DIVISION.—Set the divisor on the left of the dividend, with a line between them, and one under the dividend.

Beginning at the left, see how many times the divisor is contained in each figure of the dividend, and set the result under the dividend.

Whenever there is a remainder, prefix it to the next figure of the dividend, before dividing.

If the divisor is not contained in any figure, except the first, set 0 under such figure, and regard it as a remainder.

PROOF.—Multiply the quotient by the divisor: the product, increased by the remainder, if any, will be equal to the dividend.

Ex. 13. Divide 684 by 2.	Quot. 342.
14. Divide 795 by 3.	Quot. 265.
15. Divide 8016 by 4.	Quot. 2004.
16. Divide 9127 by 5.	Quot. 1825, Rem. 2.
17. Divide 10238 by 6.	Quot. 1706, Rem. 2.
18. Divide 21349 by 7.	Quot. 3049, Rem. 6.
19. Divide 324510 by 8.	Quot. 40563, Rem. 6.
20. Divide 435621 by 9.	Quot. 48402, Rem. 3.
21. Divide 546732 by 10.	Quot. 54673, Rem. 2.
22. Divide 657843 by 11.	Quot. 59803, Rem. 10.
23. Divide 768954 by 12.	Quot. 64079, Rem. 6.
24. Divide 8791065 by 11.	Quot. 799187, Rem. 8.
25. Divide 98102176 by 10.	Quot. 9810217, Rem. 6.

26. Divide 109213287 by 9. Quot. 12134809, Rem. 6.
 27. Divide 2110324398 by 8. Quot. 263790549, Rem. 6.
 28. Divide 32214354109 by 7. Quot. 46020505872, Rem. 5.
 29. Divide 433254652110 by 6. Quot. 72209108685.
 30. Divide 5443657632215 by 5. Quot. 1088731526443.
 31. Divide 6554768743324 by 4. Quot. 1638692185831.
 32. Divide 766587985443 by 3. Quot. 255529328481.
 33. Divide 118456974 by 9. Quot. 13161886.
 34. Divide 4546328 by 8. Quot. 568291.
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LONG DIVISION.

Ex. 33. Divide 7527 by 92.

$$\begin{array}{r} 7527 \Big| 92 \\ 736 \quad | 81 \\ \hline 167 \\ \quad | 92 \\ \hline 75 \end{array}$$

§ 114. MODEL.—9 in 75, 8 times; multiply the divisor by 8; 8 times 2 are 16; 8 times 9 are 72, and 1 are 73: subtract the product from the dividend; 7; 6 from 12 leaves 6; 4 from 5 leaves 1:—9 in 16, once; multiply the divisor by 1; once 2 is 2; once 9 is 9: subtract the product from the previous remainder; 2 from 7 leaves 5; 9 from 16 leaves 7. The quotient is 81, and the remainder 75.

EXPLANATION.—The divisor is now placed on the right of the dividend, for convenience in multiplying. The number 9 is used as a *trial divisor*. As one figure of the real divisor is thus omitted, one figure of each partial dividend must be omitted also. Hence, since we use 75 as a *trial* dividend, the real first partial dividend is 752, and we set 6, the first figure of the product under 2, one place to the right of 5. The 8 of the quotient stands for 80; and hence the first product is really 7360, and must be so regarded in subtracting.

Ex. 34. Divide 8932 by 29.

$\begin{array}{r} 8932 \\ \hline 29 \\ 87 \\ \hline 232 \\ 232 \\ \hline 0 \end{array}$	<p>§ 115. MODEL.—3 in 8, 3 times ; multiply the divisor by 3 ; 3 times 9 are 27, 3 times 2 are 6, and 2 are 8 : subtract the product from the dividend ; 3 ; 7 from 9 leaves 2 :—3 in 2, no time ; annex 2 :—3 in 23, 8 times ; multiply the divisor by 8 ; 8 times 9 are 72 ; 8 times 2 are 16, and 7 are 23 : subtract the product from the previous remainder ; 0. The quotient is 308.</p>
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EXPLANATION.—If the second figure of the divisor is less than 5, the first figure is the trial divisor, but, if the second figure is greater than 5, the trial divisor is one more than the first figure. This trial divisor will almost always give within 1 of the proper quotient figure, and will usually give it exactly. If, at any time, however, after multiplying, a quotient figure is found to be too small, let it be increased a unit at a time, until the correct figure is found ; and, if it is found to be too large, let it be diminished in the same way.

In this example, the first product is really 8700 ; but, after we begin dividing, every remaining figure of the dividend must give a figure of the quotient. In subtracting, therefore, we do not begin at the extreme right, as we usually do ; but we begin only one figure to the right of the first partial dividend.

We may now give the following

RULE FOR LONG DIVISION.—Set the divisor on the right of the dividend, with a line between them, and one under the divisor.

Beginning at the left, see how often the divisor is contained in the first part of the dividend : the result will be the first figure of the quotient. Multiply the divisor by this quotient figure, and subtract the product from that part of the divi-

dividend which was used, annexing to the remainder the next figure of the dividend.

Take this remainder as a second partial dividend, and from it obtain the second quotient figure. Multiply the divisor by this figure, and subtract the product from the previous remainder, annexing to the second remainder the next figure of the dividend.

Continue this process till all the figures of the dividend have been used.

If any partial dividend will not contain the divisor, set 0 in the quotient, annex an other figure of the dividend, and divide again.

PROOF. 1.—The same as in § 113, for short division.

Or, 2. Subtract the remainder, if any, from the dividend ; divide this remainder by the quotient, and the result will be the divisor.

Ex. 35. Divide 672 by 21.	Quot. 32.
36. Divide 551 by 29.	Quot. 19.
37. Divide 864 by 32.	Quot. 27.
38. Divide 1444 by 38.	Quot. 38.
39. Divide 1008 by 42.	Quot. 24.
40. Divide 3478 by 47.	Quot. 74.
41. Divide 2091 by 51.	Quot. 41.
42. Divide 49358 by 58.	Quot. 851.
43. Divide 26596 by 61.	Quot. 436.
44. Divide 27068 by 67.	Quot. 404.
45. Divide 33361 by 73.	Quot. 457
46. Divide 36506 by 78.	Quot. 468.
47. Divide 23534 by 82.	Quot. 287.
48. Divide 43521 by 89.	Quot. 489.
49. Divide 98901 by 99.	Quot. 999.
50. Divide 98209 by 109.	Quot. 901.
51. Divide 112924 by 218.	Quot. 518.

52. Divide 199143 by 327.	Quot. 609.
53. Divide 232824 by 436.	Quot. 534.
54. Divide 5815550 by 598.	Quot. 9725

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PROMISCUOUS PROBLEMS.

1. If a field of 56 acres produce 1232 bushels of wheat, how many bushels does each acre produce ?
Ans. 22 bushels.
2. How many gallons will 205 barrels contain, if each barrel holds 27 gallons ?
Ans. 5535 gallons.
3. Having a journey of 900 miles to make, I have already accomplished 279 miles of it ; how much farther have I to go ?
Ans. 621 miles.
4. A broker loaned 275 dollars to one man, 325 to another, and 463 to a third ; how much do the three together owe him ?
Ans. 1063 dollars.
5. A merchant bought 2575 dollars' worth of dry-goods; and, after selling to the value of 2129 dollars, he has on hand 916 dollars' worth ; how much is his gain on the whole ?
Ans. 470 dollars.
6. A man sold a tract of land for 3000 dollars, and with the proceeds bought 45 head of cattle at 45 dollars a head ; how much money had he left ?
Ans. 975 dollars.
7. A man bought 8 yards of cloth at 9 dollars a yard, a silk hat for 5 dollars, a satin vest pattern for 7 dollars, and a pair of boots for 11 dollars ; what did they all cost him ?
Ans. 95 dollars.
8. A man earns 45 dollars a month, but spends 26 dollars a month ; how long will it take him to pay for 5 acres of land at 38 dollars an acre ?
Ans. 10 months.

9. A farmer has three tracts of land : the first contains 244 acres, the second twice as much as the first, and the third half as much as both the other two ; how many acres has he in all ? Ans. 1098 acres.

10. If 11 beeves weigh 6017 pounds, what is their average weight ? Ans. 547 pounds.

11. How many weeks are there in 161 days ? Ans. 23 weeks.

12. At 15 dollars a month, how long could you hire a man to work for 225 dollars ? Ans. 15 months.

13. If 5280 feet make a mile, how many feet are there in 15 miles ? Ans. 79200 feet.

14. Willie walked 2 miles one day, 4 miles the next, and 5 miles the next ; how many feet did he walk in all ? Ans. 63360 feet.

15. If the multiplicand is 529, and the multiplier is 19, what is the product ? Ans. 9051.

16. If the product is 36204, and the multiplicand is 1058, what is the multiplier ? Ans. 38.

17. If the multiplier is 41, and the product is 16441, what is the multiplicand ? Ans. 401

18. If the dividend is 15170, and the divisor is 74, what is the quotient ? Ans. 205.

19. If the divisor is 95, and the quotient is 78, what is the dividend ? Ans. 7410.

20. If the quotient is 37, and the dividend is 6512, what is the divisor ? Ans. 176.

21. Mr. Jones gave his daughter 1200 dollars, his son 500 dollars more than her, and his wife twice as much as both of them together ; what did he give his wife ? Ans. 3400 dollars.

22. Mr. Smith contributed 75 dollars to Domestic Missions, 25 dollars less than that to Foreign Missions, and to

the Bible Cause twice as much as to Foreign Missions; what did he give to all three? Ans. 225 dollars.

23. A dealer bought 6 barrels of apples at 13 dollars a barrel, and sold 2 barrels at 17 dollars, and the rest at 15 dollars, what did he gain on the whole? Ans. 16 dollars.

24. I bought 19 cords of wood for 133 dollars: I afterwards sold 7 cords of it at a loss of 2 dollars a cord, and the rest at a profit of 3 dollars a cord; what did I receive for the wood? Ans. 155 dollars.

25. On a journey of 576 miles, I have traveled 9 days at 32 miles a day; but I am compelled to finish the journey in 8 more days; at what rate, per day must I travel?

Ans. 36 miles.

26. A man sold one neighbor 28 acres of land for 252 dollars, and an other 19 acres at the same rate; what did the second neighbor pay him? Ans. 171 dollars.

27. How many acres of land at 17 dollars an acre may be bought for 289 dollars? Ans. 17 acres.

28. If 5 bricklayers can do a certain work in 27 days, in how many days ought 3 men to do the same work?

Ans. 45 days.

29. What should be paid for 9 yards of broadcloth at 7 dollars a yard, 1 vest pattern at 6 dollars, 1 pair of boots at 15 dollars, 3 yards of cassimere at 5 dollars, 1 silk hat at 5 dollars, 6 linen shirts at .4 dollars, and 4 handkerchiefs at 2 dollars apiece? Ans. 136 dollars.

30. A housekeeper bought 2 barrels of flour at 10 dollars a barrel, 10 bushels of corn at 1 dollar, 5 hundred pounds of pork at 6 dollars a hundred, 2 kegs of lard at 15 dollars a keg, and 1 sack of salt at 4 dollars; what did he pay for all? Ans. 94 dollars.

31. In a collecting tour, I received from one debtor 29 dollars, from an other 13 dollars more than from the first,

from a third 6 dollars less than from the second, and' from a fourth 3 dollars more than from the first three; how much did I collect in all? Ans. 217 dollars.

32. The divisor is 32, the quotient is 302, the remainder is 23; what is the dividend? Ans. 9687.

33. The remainder is 33, the minuend is 303; what is the subtrahend? Ans. 270.

34. The multiplicand is 304, the multiplier is 43; what is the product? Ans. 13072.

35. The dividend is 1855, the divisor is 53; what is the quotient? Ans. 35.

36. The product is 19278, the multiplicand is 306; what is the multiplier? Ans. 63.

37. The subtrahend is 370; the remainder is 307; what is the minuend? Ans. 677

38. What is the difference between twenty-seven and twenty-seven thousand? Ans. 26973.

39. What is the sum of twenty-seven and twenty-seven thousand? Ans. 27027

40. What is the product of twenty-seven and twenty-seven thousand? Ans. 629000.

41. What is the quotient of twenty-seven thousand by twenty-seven? Ans. 1000.

42. A farmer who has 50 sheep, buys from his neighbor 50 more; he then sells 25 to the butcher; how many has he left? Ans. 75.

43. John had 40 apples; he gave his brother 10, kept 10 for himself, and divided the remainder equally between his two sisters; how many had they apiece? Ans. 10.

44. A gentleman dying, left his estate, which amounted to 25000 dollars, to his son and two daughters, as follows: to his son he gave 13000 dollars, and to his two daughters

the remainder, to be divided equally between them; how much apiece had the daughters? Ans. 6000 dollars.

45. A merchant bought 8200 barrels of flour; he then sold 3766 barrels; he then bought 5000 barrels; after which he sold 4879 barrels; how many barrels of flour has he still on hand? Ans. 4565.

46. A man who sets out on a journey, intends to travel 2450 miles; how far must he go every day, to perform the journey in 50 days? Ans. 49 miles.

47. A grocer bought 24 bags of coffee, containing 3000 pounds, and sells 15 bags, containing 1736 pounds; how many bags, and how many pounds, has he remaining?

Ans. 9 bags, 1264 pounds.

48. Supposing a man to receive in a year 2920 dollars, how much a day is his income at that rate; and supposing that his expenses for the whole year amount to 1769 dollars, how much will he save in a year?

Ans. His income will be 8 dollars a day, and he will save 1151 dollars a year.

TABLES.

RELATIONS OF CONCRETE NUMBERS.

§ 116. The relations of the concrete numbers in most general use are given the following tables.

§ 117 United States Money.

10 mills, m.	make	1 cent,	ct.
10 cents	"	1 dime	d.
10 dimes	"	1 dollar	\$
10 dollars	"	1 Eagle	E.

Though there are five denominations given in this table, yet only two of them are in general use, namely, dollars and cents.

Thus, instead of 2E. \$7, 4d. 5ct., we usually say \$27, 45ct., or, as it is generally written, \$27.45, the cents being simply separated from the dollars by a period.

1. In 5 cents, how many mills?
2. In 6 dimes, how many cents?
3. In 4 dollars, how many cents?
4. In 3 Eagles, how many dollars?

§ 118. English, or Sterling Money.

4 farthings, qr.	make	1 penny,	d.
12 pence	"	1 shilling,	s.
20 shillings	"	1 pound,	£
Also, 5 shillings	"	1 crown,	
21 shillings	"	1 guinea.	

1 pound Sterling is worth \$4.84 by a law of the United States.

1. In 3 guineas, how many shillings?
2. In 10 crowns, how many shillings?
3. In £2, how many pence?
4. In 3 shillings, how many farthings?

§ 119. French Money.

10 centimes, cent.	make	1 décime,	dec.
10 décimes	"	1 franc,	f.

French money is usually counted in francs and centimes, which, like dollars and cents, are simply separated by a period.

Thus, 27.19f. is equal to 27f. 1dec. 9cent.

1 franc is worth 18ct. 6m. United States currency.

1. How many décimes in 5 francs?
2. How many centimes in 5 francs?
3. How many francs in 60 décimes?
4. How many décimes in 70 centimes?

§ 120. Troy Weight.

Used for weighing gold, silver, jewels, &c.

24 grains, gr.	make	1 pennyweight,	dwt.
20 pennyweights	"	1 ounce,	oz.
12 ounces	"	1 pound,	lb.

1. In 48 grains, how many pennyweights?
2. In 60 pennyweights, how many ounces?
3. In 72 ounces, how many pounds?
4. In 5 pounds, how many pennyweights?
5. In 80 pennyweights, how many ounces?
6. In 4 pounds, how many grains?

§121. Apothecaries' Weight.

Used in *mixing* medicines.

20 grains, gr.	make	1 scruple,	sc. or ʒ
3 scruples	"	1 dram,	dr. or ʒ
8 drams	"	1 ounce,	oz. or ʒ
12 ounces	"	1 pound,	lb. or lb.

The pound Apothecaries' is the same as the pound Troy.

1. In 40 grains, how many scruples?
2. In 40 drams, how many scruples?
3. In 16 drams, how many ounces?
4. In 16 pounds, how many ounces?

§122. Avoirdupois Weight.

Used for weighing all articles except those mentioned in §§ 120 and 121.

16 drams, dr.	make	1 ounce,	oz.
16 ounces	"	1 pound,	lb.
25 pounds	"	1 quarter,	qr.
4 quarters	"	1 hundredweight, cwt.	
20 hundredweight	"	1 ton,	T.

1. How many ounces in 4 pounds?
2. How many pounds in 3 quarters?
3. How many tons in 40 hundredweight?
4. What will 3 lb. of Indigo cost, at 25 cents an ounce?

§123. Long Measure; or, Linear Measure.

Used in measuring lines, or distances

12 inches, in.	make	1 foot,	ft.
3 feet	"	1 yard,	yd.
5½ yards	"	1 rod.	rd.
40 rods	"	1 furlong,	fur.
8 furlongs	"	1 milé	mi.

1. In 6 feet, how many inches?
2. In 3 yards, how many feet?
3. In 3 yards, how many inches?

§ 124. Square Measure.

Used for measuring surfaces of land, painting, plastering, paving, &c. •

144 square inches, sq. in.	make	1 square foot, sq. ft.
9 square feet	"	1 square yard, sq. yd.
30 $\frac{1}{4}$ square yards	"	1 perch, P.
40 perches	"	1 rood, R.
4 roods	"	1 acre, A.
640 acres	"	1 square mile, sq. mi.

1. How many square inches in 3 square feet?
2. How many square yards in 27 square feet?
3. How many perches in 16 roods?

§ 125. Cubic Measure.

Used for measuring the contents of solids.

1728 cubic inches, cu. in.	make	1 cubic foot, cu. ft.
27 cubic feet	"	1 cubic yard, cu. yd.
1. In 2 cubic yards, how many cubic feet?		
2. In 1 cubic yard, how many cubic inches?		
3. In 54 cubic feet, how many cubic yards?		

§ 126. Dry Measure.

Used for measuring grain, fruits, vegetables, salt, &c.

2 pints, pt.	make	1 quart, qt.
4 quarts	"	1 gallon, gal.
2 gallons	"	1 peck, pk.
4 pecks	"	1 bushel, bu.
Also, 5 bushels	"	1 barrel, of corn,
8 bushels	"	1 quarter,
36 bushels	"	1 chaldron,

1. In 4 barrels of corn, how many bushels?
2. In 20 bushels, how many pecks?
3. In 80 pecks, how many gallons?
4. In 5 gallons, how many pints?

§ 127. Liquid Measure; or, Wine Measure.

Used in measuring liquids; as, molasses, spirits, wine, water, &c.

4 gills, gi.	make	1 pint,	pt.
2 pints	"	1 quart,	qt.
4 quarts	"	1 gallon,	gal.
3½ gallons	"	1 barrel,	bbl.
2 barrels, or 63 gallons	"	1 hogshead,	hhd.
2 hogsheads	"	1 pipe,	pi.
2 pipes	"	1 tun,	tun.
Also, 42 gallons	"	1 tierce,	
2 tierces	"	1 puncheon.	

1. What will 3 quarts of wine cost, at 2 dollars a pint?
2. In 2 hogsheads, how many gallons?
3. In 3 gallons, how many pints?
4. In 1 gallon, how many gills?

§ 128. TIME.

60 seconds, sec.	make	1 minute,	min.
60 minutes	"	1 hour,	hr.
24 hours	"	1 day,	da.
365½ days	"	1 year,	yr.
10 years	"	1 decade,	dec.
10 decades	"	1 century,	cent.
Also, 7 days	"	1 week,	wk.
30 or 31 days	"	1 month,	mo.
12 months	"	1 year.	

According to the table, 365½ days make a year. To avoid the difficulty arising from the fraction, we reckon three

years of 365 days each, and one of 366 days. This long year is called *leap year*. The leap years are those whose numbers are exactly divisible by 4; except that the centennial years are not leap years unless their numbers are exactly divisible by 400. Thus, 1860 and 1848 were leap years; but 1900 will not be leap year, because it is not divisible by 400.

The year is also divided into four seasons; Spring, Summer, Autumn, and Winter. These consist of the following months:—

SPRING,	3.	March,	Mar.	has 31 days.
	4.	April,	Apr.	" 30 "
	5.	May,	May	" 31 "
SUMMER,	6.	June,	Jun.	" 30 "
	7.	July,	Jul.	" 31 "
	8.	August,	Aug.	" 31 "
AUTUMN,	9.	September,	Sept.	" 30 "
	10.	October,	Oct.	" 31 "
	11.	November,	Nov	" 30 "
WINTER,	12.	December,	Dec.	" 31 "
	1.	January,	Jan.	" 31 "
	2.	February,	Feb.	" 28 "

Thirty days have September,
 April, June and November;
 All the rest have thirty-one,
 Except February alone,
 Which has but twenty-eight in fine,
 Till leap year gives it twenty-nine.

1. How many days are there in the three Spring months?
2. Is 1865 a leap year or not?
3. In 2 centuries, how many decades?
4. In 50 years, how many decades?

§129. PAPER.

24 sheets, sh.	make	1 quire,	qr.
20 quires	"	1 ream,	rm.
2 reams	"	1 bundle,	bdle.
5 bundles.	"	1 bale.	

1. How many sheets of paper in 1 ream?
2. How many quires in 5 reams?
3. How many reams in 40 quires?
4. How many sheets in 40 quires?

§130. DUODECIMALS.

12 units	make	1 dozen,	doz.
12 dozen	"	1 gross,	gr.
12 gross	"	1 great gross,	
Also, 20 units	"	1 score.	

1. In 1 gross, how many units?
2. In 24 dozen, how many gross?
3. In 1 great gross, how many units?
4. How many units in 3 score and 10?

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